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INSIDE DOPE

by GEORGE F. TAUBENECK

Story of the Week
What Hopes for World Trade?
Why They're Worried
Congress Sees It, Too

Story of the Week

Nearly every week in the year seems to have been captured by some society or other for its very own. It all goes to show that Americans will join practically anything, and that as a people we are confusingly overorganized.

To lend weight to this latter observation, we cite this fact: One innocent, unsuspecting week in June was designated in toto as National Noise-Abatement Week, National Baby Week, and National Gut-Bucket Jazz Week.

What Hopes for World Trade?

Does the United States now stand alone in its belief that world trade can best be developed through established private channels?

A good many exporters have gloomily said that they think so. They point to the existence of utterly controlled state trading in some countries, the current trend toward that species of stagnation in others, and the apparent disinclination of most of the world's national leaders to abandon governmental strait-jackets despite past and present assurances to the contrary.

The recent announcement by our own U. S. State Department that it has requested the termination of foreign purchasing missions in this country as soon as possible has served to re-emphasize the ultimate fear voiced by foreign traders at the close of the war.

Their concern then over the continuation and spread of the disease of state trading (particularly in Europe) and its menace toward the continuity of private firms, has been analyzed by Henry Chalmers, a consultant on commercial policy for the U. S. Bureau of Foreign and Domestic Commerce.

"Earnest question being raised," Mr. Chalmers writes, is this: "how far is there still need for foreign countries to concentrate most of their buying in the U. S. through official purchasing missions, considering the consequent injuries to private trading which so often result?"

He observes that "damaging complaint has been heard from American exporters over the by-passing of established trade channels in this country, the suspension of normal pricing methods, and the subordination of the use of brand names, as well as the breaks in long-developed relations between suppliers here and their distributors abroad.

"Many fear that these controls," he continues, "if maintained beyond the actual emergency period, or to a degree not entirely essential, might too easily acquire an established position, and thereupon develop into the regular or dominant methods whereby the countries concerned will procure their imports without regard to facts or needs.

"From a larger view, too, there is concern over the possibly harmful pressures which may be loaded upon American producers of particular lines of goods which are presently in great demand from the operations of large-scale foreign organizations, each holding a buying monopoly in the given product for the market it represents—especially *after* the period of acute shortages of goods has been resolved.

"With regard to certain European countries, this concern has enlarged itself in tune with the reported plans for the State to take over certain

(Concluded on Page 4, Column 3)

AFL Moves In To Organize Frigidaire As CIO Chiefs Quit

DAYTON, Ohio — Charging that national and regional leaders of the United Electrical Workers (CIO) were Communists, Ralph E. Moses, president of the large Frigidaire Local 801, resigned last week along with Ben R. Cromwell, secretary, and asked members to join the AFL.

This action was interpreted as the opening of the AFL's membership drive against the CIO. The view appeared to be substantiated by the reported arrival here of a number of AFL organizers.

Mr. Moses, who was twice elected to presidency of the local, claimed in a speech in the union hall here that James Matlas, national director of organization, and Julius Emstack, secretary of the national union, were Communists. After the talk, described as "blistering," he reportedly mailed letters to all local members, calling on them to resign from the CIO under provisions of the escape clause in the new contract, ratified last Wednesday, and join the AFL.

One report said the resignations had been planned with the knowledge of John Brydenbach, president of the AFL Central Labor Council here and business agent for the AFL International Brotherhood of Electrical Workers.

The Frigidaire local has a membership of more than 8,000.

Copper, Brass Mill Product Prices Up

WASHINGTON, D. C.—Maximum base price increases were granted to the copper and brass industries effective June 3, 1946.

Products affected and the amount of increase for each are:

Copper—2.375 cents per pound when received from mines which have granted approved wage increases since Feb. 14, 1946. No increase is allowed for copper received from mines not affected by approved wage increases.

Brass and bronze alloy ingots—Arranged in alloy groups identified in terms of the relative copper content and content of other metals as follows:

85–5–5–5 group	2.25¢ per lb.
88–10–2 group	2.00¢ per lb.
80–10–10 group	2.25¢ per lb.
Yellow group	2.25¢ per lb.
Miscellaneous group ..	1.25¢ per lb.

Brass mill products—Manufacturers may add the amount of the increase in copper prices to their maximum prices for copper products. For alloy products, the increase in prices will be determined by the percentage of copper contained in the alloy.

Pacific Mfg. Corp. Makes Window Unit

CLEVELAND—As its first venture into the air conditioning field, the recently organized Pacific Mfg. Corp., an outgrowth of the Pacific Machine Co. of Philadelphia, has started production on a self-contained, window-type, room air conditioning unit, it has been announced by Hugh C. Troth, president.

Nearly 2,000 units are ready for delivery and an initial annual production of 25,000 units is planned, according to S. C. May, vice president and general sales manager. Eventually, Pacific hopes to make 50,000 units a year and cut the cost in half, he added.

The new air conditioner is equipped with a ½-hp., motor driven, hermetically sealed, twin-cylinder com-

(Concluded on Back Page, Column 1)

Jerry Tyler Hurt, Wife, Son Die In Hotel Fire

CHICAGO, June 6—Jerry Tyler, president of Tyler Fixture Corp., is in critical condition at St. Luke's hospital here and his wife Mary and son Michael are both dead as a result of the fire disaster which occurred Tuesday night, June 4, in the LaSalle hotel here.

Mr. Tyler's condition was described by attending physicians as "critical but with a chance of recovery." He is suffering from the effects of smoke asphyxiation and has not recovered consciousness since being brought to the hospital.

From what can be learned, apparently both Mrs. Tyler and her son were dead when found in the hotel. The fire claimed a total of 58 lives, with an additional 200 persons being injured. It was Chicago's worst hotel fire disaster.

The Tylers had gone to Chicago on a family outing, to attend a baseball game.

The Tyler Fixture Corp. is a leading manufacturer of commercial refrigerators and store fixtures, and has expanded into the production of home freezers. The company's growth under the energetic leadership of its young president (Mr. Tyler is now 45 years old) has been one of the most spectacular achievements in the last decade of refrigeration industry history.

Mr. Tyler is a past president of the Commercial Refrigerator Manufacturers Association and is also active in Michigan state politics.

Kerotest Acquires Calif. Valve Firm

PITTSBURGH—Kerotest Mfg. Co. has acquired Security Valve Division of Security Engineering Co., Inc., Whittier, Calif., has formed Kerotest Pacific Co. as a subsidiary of the parent company here, and has purchased a new manufacturing plant in Los Angeles, according to an announcement by Edward G. Mueller, Kerotest president.

Mr. Mueller said the present line of Security cast and forged steel

(Concluded on Back Page, Column 3)

Strike Is Settled at Thor Washer Plant

CHICAGO — Following an agreement ending a 54-day strike of 833 CIO employes, production of Thor washing machines has resumed here at the Hurley Machine division of the electric household Utilities Corp.

Included in the agreement between the firm and Local 1150, United Electrical Radio & Machine Workers Union, were an 18½ cent-an-hour raise, maintenance of membership and union dues check-off, as well as a bonus of $25 to workers who report for duty within seven days after they are called back and who were on the company payroll Oct. 1, 1945.

Parts Wholesaler Ships On Prices 'As of Today'

SYRACUSE, N. Y.—Because shifts in prices, discounts, and net costs are expected to continue for an indefinite time, Central Service Supply Co. has informed customers that merchandise will be shipped in accordance with approved prices on the day of shipment in order to avoid misunderstandings of billings.

Ted Glou, head of the company and president of the Refrigeration Equipment Wholesalers Association, said orders now on file, unless cancelled, would be shipped under the new policy.

Senate OPA Measure Restores Old Discounts

ASRE Sets Up New Membership Grade; Others May Follow

ST. PAUL—With the Twin-City Section as host, the American Society of Refrigerating Engineers met for its Thirty-Third Spring Meeting here June 3-5, bringing section delegates and others who attended up to date on the activities of the society, and offering one of the liveliest technical programs in recent years.

The June 4 technical session was devoted entirely to an "Air Conditioning Symposium," with emphasis on comfort air conditioning, signifying the complete reconversion to the normal peacetime functioning of the industry. (Reports on the technical sessions will be published in later issues of the NEWS.)

Two major changes were made in the Constitution of the Society, the favorable votes on the amendments being announced at the meeting.

The first change provides for the election of a Director from each Section by the Section to serve a three-year term on the Council, and to remove from the Council the Section chairman. The chairman formerly served as a Director for a one-year term, a generally unsatisfactory procedure because of the lack of continuity.

The second amendment provides for the grade of Fellow member. Only those who have been a full member for a period of 10 years or longer, and who have made special contributions to the art of refrigeration engineering or who are determined to have other special qualifications, are eligible for the grade of Fellow member.

The Special Committee on membership grades reported its findings—making recommendations for new grades of memberships and some revisions in dues—as follows:

1. The present Student grade shall be retained and the qualification shall be further defined to the extent that Student members shall only be accepted from bona fide students in colleges or trade schools approved by A.S.R.E. Education Committee. There shall be no age limit on the Student grade as long as the candidate is a bona fide student. Dues shall be the same as present Student grade.

2. A new grade of Junior member be established with an age limit from 21 to 28 years. The requirements for this Junior grade shall be an engi-

(Concluded on Page 17, Column 1)

Honeymoon Over? Customer Seeks a Left-Hand Door

DETROIT — A prospective refrigerator buyer in Portland, Ore. recently asked for a refrigerator with a left-hand door—a good tip-off that buyers are getting more particular, and that tendency to take anything available is about over.

One small-town dealer, a recent survey reports, made a check of the 60 people on his refrigerator "waiting list." Of these 26 were "definitely sure" they would buy a refrigerator, 22 were "pretty sure," and 12 canceled their orders.

This same dealer reported that about 50% of his waiting list for small electrical appliances turned down the chance to buy cheaper brands, preferring to wait for the "very best."

Cost Absorption Principle Seems Sure To Go Out

WASHINGTON, D. C. — The bitter battle against the principle of cost absorption in price control appears to have gained further headway as the Senate prepared to act this week on the OPA extension bill which now includes an amendment broadening the similar House measure restoring 1942-level discounts to wholesalers and retailers of refrigerators and other appliances.

The amendment, proposed by Senator Fulbright, Arkansas Democrat, was approved last week by the Senate Banking and Currency Committee, 11 to 4. Its passage by the Senate was thought likely.

Sen. Fulbright's amendment would prevent OPA from applying its cost absorption principle to those products on which wholesalers and retailers make their profits through discounts from fixed retail prices.

This amendment is similar to the one offered by Rep. Crawford and approved by the House, and both apply to refrigerators, radios, vacuum cleaners, automobiles, and other items. However, the Crawford amendment covered only products whose manufacture was reduced 75% during the war by Government order.

Main commodity added by the Fulbright measure is farm machinery.

Restoration of 1941 profit margins for manufacturers and processors was also seen despite the Senate committee's disapproval of a proposal to that end by Sen. Taft. Sen. Taft, whose amendment was defeated by a tie vote, was quoted as saying he would place his measure before the Senate, if it was not reconsidered by the committee, and he appeared confident of its passage.

Under the Taft amendment, OPA would be prohibited from establishing ceilings lower than Oct. 1-15, 1941, prices plus "an amount equal to the increase in the weighted average of the per unit costs of a reasonable number of typical manufacturers or processors with respect to such product since the base period." Adjustments allowing for changes in size or quality are provided for.

Sen. Taft's proposal is comparable to the cost-plus measure made by Rep. Wolcott and approved by the House but last week deleted by the Senate committee. Rep. Wolcott's amendment provided that all producers, processors, and distributors must be permitted cost plus "a reasonable profit." However, the Taft proposal does not apply to retailers and distributors or to commodities produced at a loss by manufacturers.

Three proposals by Sen. Capehart, Indiana Republican, which would apply the principle of the Taft amendment to wholesalers, distributors, and certain public services, were rejected by the committee.

Other provisions of the bill agreed upon just prior to an official committee vote included:

1. Extension of price control, as amended, until June 30, 1947.

2. Establishment of a decontrol board to act on appeals by industry advisory committees when the price administrator or Secretary of Agriculture denied petitions by such committees for removal of controls on a particular product.

3. Abolition of OPA's Maximum Average Price order.

4. Removal of controls by Dec. 31, 1946, on all items not important to living costs or business costs and prohibition of controls on items not under control on May 1, 1946.

New Designs in Household Refrigerators and Ranges, Untested But Showing Unusual Ideas!

'Revolvador' Refrigerator and Range Blueprinted in Cylindrical Design

By Ross Potter

YPSILANTI, Mich.—A cylindrical refrigerator and a range using a cylindrical oven design have been blueprinted and built in model form by Robert G. Rutledge, design engineer for United Stove Co. here.

His fullsize mockup of the range was exhibited at Chicago's World's Invention Exposition in April. A 7-cu. ft. model of the refrigerator will be completed before the end of June, Mr. Rutledge reports.

Future plans for the two appliances depend upon developments during the next two months, he says. He plans to contact various established manufacturers and discuss production possibilities during that time. Patents and patent rights on both appliances are for sale. If he doesn't find what he is looking for, Mr. Rutledge plans to form a company and go into production himself.

The basic feature in both appliances is the circular, revolving shelves. A central shaft, threaded to move up or down when revolved, is the axis upon which intermediate shelves may be moved up or down.

The top shelf in this assembly is fixed to the shaft, and when it is revolved clockwise shelf and axis move down, leaving an unobstructed top area for oversized items like watermelons or Thanksgiving turkey. The entire assembly lifts out when the shaft reaches maximum height and the movable shelves have been moved up close under the top one.

The shelves are 21 in. in diameter in the range, 22 in. in the refrigerator.

The above-pictured "table level" refrigerator is a "still" shot from a recently released Popular Science movie short, released by Paramount Pictures. Paramount Pictures, despite repeated inquiries by the editors of Air Conditioning & Refrigeration News, would not supply further details about the construction of this refrigerator or who makes it. The one genuine part seems to be the evaporator at the far right. Our guess is that the rest is a mock-up of what somebody thought a table level refrigerator ought to look like without too much attention to engineering and design problems.

Of the two appliances, the refrigerator is the more unusual because it follows the cylindrical design completely. The idea is not brand new, Mr. Rutledge discovered when it came to checking with the U. S. Patent Office.

The Jack Frost refrigerator, built in Grand Rapids about 25 years ago, he found, used the same basic design. Its central axle was fixed in place, allowing no shelf removal and no cleared area on the top shelf, and instead of a sliding door it had a swingout door hinged at the right.

The chief advantages claimed for the Revolvador refrigerator will be: 1. Its greater capacity, as compared with a squared box of the same outer dimensions. 2. Its greater accessibility—you never have to reach farther than half way in. 3. Its sliding panel door feature—not only no door to swing out and block traffic, but also no worry as to whether it should swing left or swing right in your kitchen. Pressure on a foot pedal will open the door, or close it.

The unit as completed will stand 36 in. high, with 22 in. shelves and a freezer compartment below the shelves, accessible through any one of four quadrant doors that close flush with the freezing compartment as it revolves. Outer diameter of the refrigerator is 26 in.

The unit's evaporator is centered at the top of the door opening, and contains four ice cube trays and a small deck for frozen foods ready for immediate use. The evaporator assembly does not revolve. Milk bottles and other tall items travel completely around the evaporator on a separate shelf that revolves upon a bracket fixture.

Mr. Rutledge began work on the refrigerator in 1941, dropped it when war demands increased United's production schedules, and picked it up again only recently. He had completed the Revolvador range the year before in a wooden mockup model.

Adaptable for gas or electricity, the range is 45 in. wide and 36 high. Depth is 22 in. at either end, 25 in. at the center. The oven opening is 16 in. square, and the shelves within are 21 in. in diameter.

The whole oven compartment revolves, and an additional insulation panel on the left wall compensates for the panel opening that is the doorway when the oven is in that position. The sliding door panel, Mr. Rutledge points out, allows a more complete sealing of the oven chamber than is possible in conventional models, and brings heat loss down to a point never before possible.

Storage space in the range is provided for in the compartment to the right of the oven, and in the full width drawer that crosses under all three compartments.

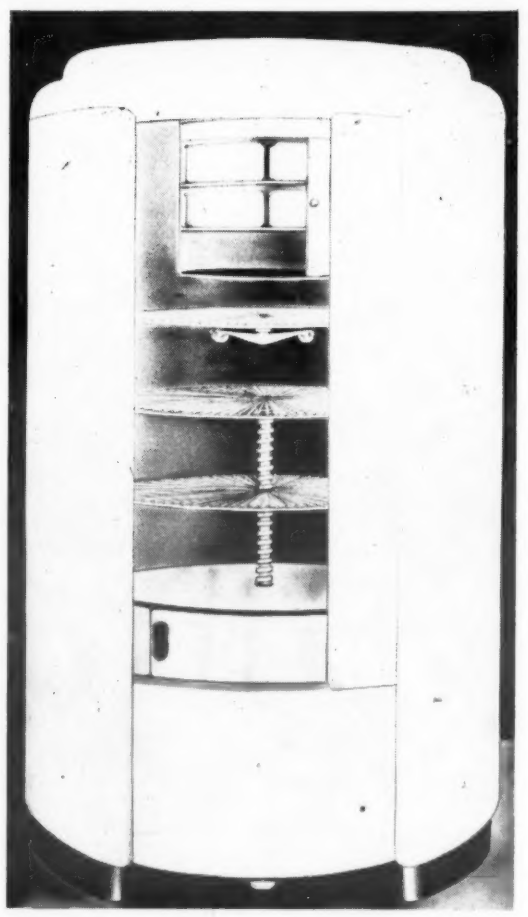
The compartment at the left of the oven holds a special swingdown broiler that comes out automatically when the door, which is hinged at the bottom, is opened. The broiler shelf is horizontal whatever the position of the door. There is a possibility that this feature has been patented elsewhere, Mr. Rutledge reports. Research to make sure of this is in process.

The range top has its working space in the center, with the four cooking units balanced at two on each side. In each case the larger unit is at the back. The six control dials run across the rear panel, with two electric outlets centered there for a coffeemaker, toaster, or waffle iron.

Advantages claimed for the range include, besides the three mentioned for the refrigerator: 1. The ease with which roasts can be basted—no need to pull them farther than half way out. 2. The heat consistency maintained throughout the oven compartment; there are no corners to give different heat readings because of incomplete air circulation.

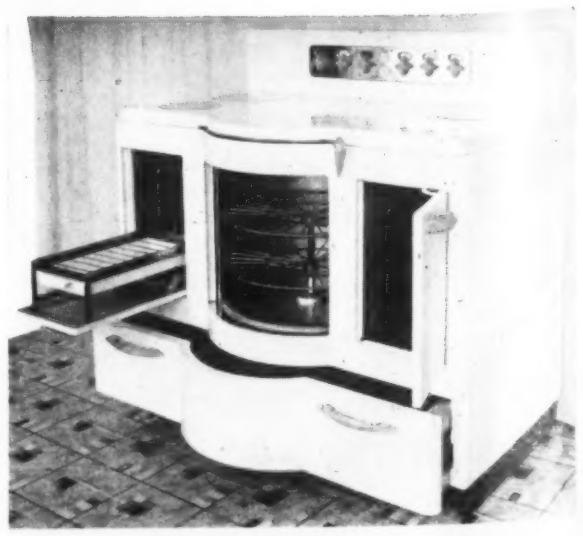
Mr. Rutledge's experience in his field is considerable. He started out as a commercial artist at the close of the last war, after a hitch in the Canadian Army.

He worked for the Ford Motor Co. for seven years, for the Hoover Ball & Bearing Co. for seven more, and has been with United as design engineer for the past 10. The company manufactures and sells Savoil oil stoves under its own brand, and makes kerosene ranges and heaters for Montgomery Ward & Co.



The "Revolvador" refrigerator uses the basic cylindrical design, with circular, revolving shelves. The central shaft is threaded so that the turning shelves move down when revolved clockwise, or move up when the spin is reversed. The top shelf on the shaft is fixed to it, and when it is turned the entire shaft moves up or down. When the shaft is revolved to its highest point it disengages from the shaft well and can be removed from the refrigerator.

The sliding panel which acts as the refrigerator door presents no obstruction to traffic, for it remains flush with the refrigerator's exterior whether open or closed. The panel slides open or shut when the foot pedal is depressed.



The "Revolvador" range uses the cylindrical design in its oven. The whole oven compartment revolves to give access through a 16-in. square opening. Within, the oven shelves can be raised or lowered in the same way as those in the refrigerator.

Lowering the top shelf allows easy entry for large roasts or fowl, with basting simplified because a half turn brings the other side to the fore.

Bonderizing

Every housewife who cleans the exterior of a refrigerator or washing machine knows the importance of a finish that retains its original lustre and remains free from the spread of rust over the years. Many of them know that Bonderizing assures a more durable finish despite the mars and scratches of family use. Refrigerators, washing machines, air conditioning units—have greater sales appeal when they are Bonderized for lasting fine appearance.

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PARKER PRODUCTS CONQUER RUST

Firm Asks ICC Permission to Start New Nationwide Refrigerated Trucking System

DALLAS, Tex. — The American Refrigerated Express Co. here has asked the Interstate Commerce Commission for permission to operate a refrigerated trucking service on a nation wide scale.

Organized by James LaBarba and sons, of the American Produce & Vegetable Co., Inc., the express company would go beyond the present regional system for refrigerated trucks, and move anywhere, any time, picking up cargo wherever it happened to be and taking it to wherever it was billed.

To handle this service, the express company has placed orders for 100 custom built truck trailers valued at $1,100,000, it was reported.

Specific advantages claimed for the new service are guaranteed control of temperature at the proper level for the particular cargo aboard; elimination of interchanges and layovers, which, Mr. LaBarba says, can be dangerous to frozen foods under present long distance shipment; door to door service; and speedier delivery.

At the first ICC hearing of the new firm's application at Fort Worth, frozen food packers from both coasts and the midwest are said to have appeared in its behalf.

The application requests permission to transport in various states frozen foods of all kinds, seafoods and freshwater fish, both fresh and frozen; fresh fruit and vegetables; and shelled and unshelled nuts.

Utility Appliance Uses Surplus Stock Funds To Purchase Range Firm

LOS ANGELES — Proceeds from an oversubscribed sale of 160,000 Utility Appliance Corp. shares will be used to purchase Gaffers & Sattler, local manufacturer of gas ranges.

The public offering consisted of 80,000 cumulative preferred at $16.625 per share and 80,000 shares of common at $5.25. Underwriters include Bateman, Eichler & Co.; Nelson Douglass & Co.; William R. Staats Co.; First California Co., Inc.; Pacific Co. of California; Hill, Richards & Co.; Maxwell, Marshall & Co.; Harbison & Gregory; Crowell, Weedon & Co.; and Bingham, Walter & Hurry.

Price Relief, Not Stepped-Up Production, Must Offset Rising Costs, Feinberg Avers

MINNEAPOLIS—Price relief will offset rising material and labor costs and increased overhead expense "more adequately" than improved manufacturing conditions, declared A. A. Feinberg, president of U. S. Air Conditioning Corp., in a recent report on operating results.

Mr. Feinberg declared that stepped-up production would only partially counteract mounting costs and expressed hope that price relief "will be granted by OPA to our industry in the very near future."

He termed operating results for the first six months of the current fiscal year ending April 30 "disappointing," although the company showed a profit. He reported that unfilled orders on April 30 totaled nearly $3.7 million and that shipments for the period were valued at only $987,336.

Material shortages and labor troubles were the main reasons for the small shipments, Mr. Feinberg said, adding that "labor difficulties which cut into our production during the month of March were satisfactorily settled and a new contract has been negotiated."

He said the company's most difficult problem is the shortage of components and raw materials.

Buffalo Man Fined $211 For Ceiling Violation

BUFFALO—In an opinion ending the case of the "balky refrigerator," Federal Judge John Knight directed a judgment of $211.50 in favor of the Buffalo district OPA against Lawrence H. Johnson, 3267 Bailey Ave.

The sum represents three times the $70.50 which OPA alleges Johnson overcharged Mr. and Mrs. John Maue for a 1931 model refrigerator. During the trial, the Maues testified the refrigerator operated at intervals, although it was guaranteed for a year.

"It is obvious that transactions such as those claimed by the government may be adopted to defeat the maximum price regulation," Judge Knight said in his opinion.

Eureka Williams Buys Out National Stamping Works

CHICAGO—Eureka Williams Corp. has purchased the National Stamping & Electrical Works, here, including its subsidiary, the Acorn Brass Mfg. Co., H. W. Burritt, president of Eureka Williams, has announced.

National Stamping will continue to manufacture White Cross home and commercial electrical appliances under its own name as a subsidiary to Eureka Williams, Mr. Burritt said. Mr. Burritt foresaw no change in the present method of distribution of White Cross products.

"We have acquired this leading company as another forward step in our postwar expansion program in this field," he said. "It further rounds out our family of better home appliances for the consuming public."

Ward Earnings Double Record of 1945 Quarter

CHICAGO—Montgomery Ward & Co. earnings for the quarter ending April 30 doubled those of the corresponding period last year, the company announced in its quarterly statement.

Earnings were $23,025,094, compared with $11,957,955 in the same quarter of 1945, the statement indicated. Net income was nearly tripled. After taxes, the company netted $13,760,098, equal to $2.57 a share, while in the same period last year the net income was $4,707,955, or 83 cents a common share.

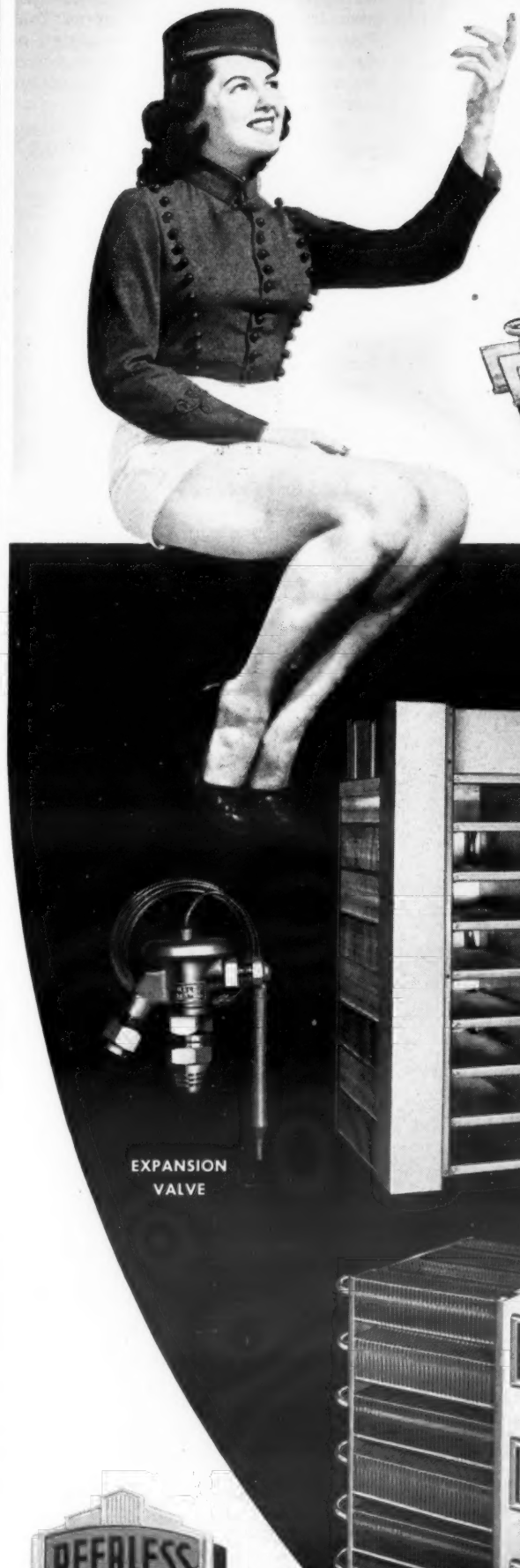
Federal and state taxes totaled $9,265,000, equal to 40.2% of the operating profit in this quarter, compared with $7,250,000, or 60.6% of earnings for the same period last year. Last year's taxes included $4,410,000 of excess profits taxes and were after reallocation of the year's final provision.

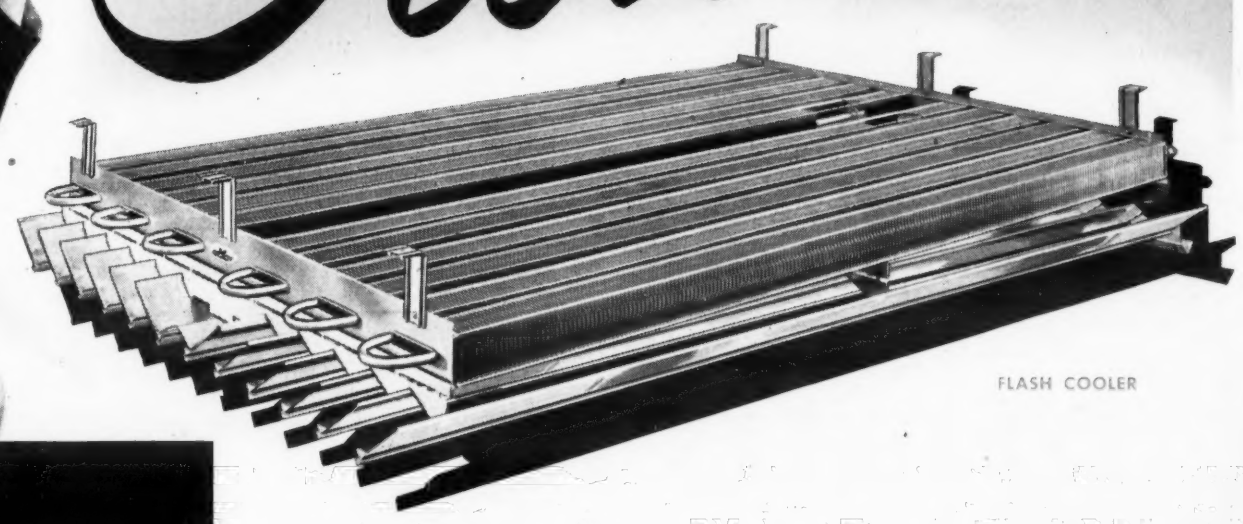
Flader Leases 4-Story Factory

BUFFALO—Frederic Flader, Inc., engineering firm which is developing new air conditioning apparatus, has leased a four-story factory building in North Tonawanda, President Frederic Flader announced.

Moving of the firm's manufacturing facilities to the new location is underway and will be completed about June 15.

TOP BILLING FOR Peerless





FLASH COOLER

Far superior in design and construction, Peerless Flash Coolers are completely non-ferrous. Pans, hangers, fins and end plates are all aluminum. Copper tubing is electro tin-plated. The entire unit is engineered for increased natural convection giving proper air circulation. Precision production going into manufacture of Peerless Flash Coolers is characteristic with the entire PEERLESS Line, giving it consistent top billing.

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INSIDE DOPE

by **GEORGE F. TAUBENECK**

(Concluded from Page 1, Column 1)

plants or lines of production, and to introduce a large measure of continuing official control over the general economic life of the nation, including its foreign trade.

"Moreover, apart from the interests of the individual producers and exporters involved, fear has been expressed that the concentration of trading operations of particular countries in governmental hands would hamper the postwar revival and expansion of international trade, which has generally been regarded as a prime stimulant to world recovery and reconstruction," our best correspondent reports.

"Some question has also been raised as to whether the spread of state-operated trading abroad, much beyond its prewar scope, might not require some material alterations in the established foreign trading methods and the normal commercial policies of the predominantly free-enterprise countries."

Why They're Worried

Several months have now elapsed since these remarks were spoken. International crises have appeared, dissolved, and reappeared again. America is still in the iron grip of labor unions. So, exporters say they can see no reason for being less fearful. If anything, they are more so.

They can discern no progress toward the lowering of the barriers which inhibit private commerce. And they are pessimistic about the success of any foreseeable U.S.-fostered trend in this direction, in spite of the State Department's recent blessing of unilateral commercial contracts, and the government's announced desire that international commerce should be handled by private firms.

To be sure, the State Department reported "general concurrence" as to this "free trade" idea among the 15 nations having purchasing missions in this country (when they were polled on a request for discontinuance of the missions).

And this poll did reveal that several governments have "indicated" that the business of their missions already has been curtailed and that the termination of the missions is "anticipated" before the end of the year.

But worldly-wise exporters call attention to the fact that despite these and other assurances, only the Netherlands has made any definite move to wind up the activities of its mission in the U. S. The report that France is considering termination of its mission has been received rather impassively, because contumacious senators know better.

(The other countries who have purchasing missions here are: Australia, Belgium, China, Greece, India, Italy, New Zealand, Norway, Poland, Portugal, Soviet Russia, the Union of South Africa, and the United Kingdom.)

Congress Sees It, Too

Observers have reported a tendency toward state trading in France, Italy, and Poland, and an inclination toward this reservation of individual rights in Belgium, China, the Netherlands, and India. The United Kingdom, of course, purchases essential commodities through the London Government.

This trend is discussed in the Eighth Report of the House Committee on Postwar Economic Policy and Planning. Quote:

"It is clear that the pattern of future world trade is greatly conditioned by the existence of state trading monopolies," the report says. "The Russian system constitutes the most powerful example of this. The system has been reproduced in all eastern European countries under Russian control and tied into Russia by secret trade treaties, as well as political control.

"It is by no means limited to those governments, however. The British Government has announced a policy of continuing state purchases for all the basic essentials of its import program in raw materials. The probability of extension of this system into other purchases seems strong."

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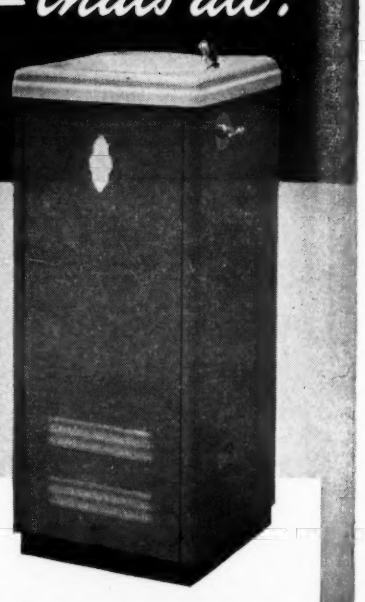

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Farm Freezer Allocation Discussed by Co-op Refrigeration Committee

CLEVELAND — Members of the Refrigeration Committee of United Cooperatives, Inc., large central buying agency serving farmer and consumer co-ops in several states, met at the Hotel Cleveland here recently to discuss the allocation of farm freezers to member units.

Fred Smith of the Carrier Corp. presented figures on his company's monthly production schedule and explained the plan for distribution for the rest of 1946.

Agreement was reached on the allocation percentages set up, based on the original orders placed by the various state and regional groups through United's services, which has headquarters at Alliance, Ohio.

Other subjects discussed at the conference related to milk coolers and to packaging material for frozen foods. United Cooperatives, it was announced, has arranged for exclusive distribution to member co-op units of Goodyear "Pliofilm" converted into pint and quart containers by Western Products, Inc.

Those in attendance were:

Glenn Noonan, Wisconsin Co-op Farm Supply, Madison, Wis.; Robert Helms, Fox River Valley Co-op Wholesale, Appleton, Wis.; Larry Kyle and Don Stewart, Farm Co-op Association, Columbus, Ohio; C. S. Jones, Farmers Cooperative Exchange, Raleigh, N. C.; E. L. Mason, Southern States Cooperative, Richmond, Va.; Robert Harkness, Minnesota Farm Bureau Service Co., St. Paul; Ken Hagan, Indiana Farm Bureau Co-op Association, Indianapolis; George Begick, Farm Bureau Services, Inc., Lansing, Mich.; Wesley Paris, Cotton Producers Association, Atlanta; Ed Newlin and George Snyder, Pennsylvania Farm Bureau Co-op Association, Harrisburg, Pa.; and Earl Wilson, The Cooperatives of Louisiana, Hammond, La.

United Cooperatives, Inc., was represented by John Brandon, manager of the refrigeration department, and Merrit Crouch, Harold Scott, and Pete Taber.

Service Men in Missouri, Arkansas Form RSES Group

SPRINGFIELD, Mo. — Fifty refrigeration service men from a Southwest Missouri-North Arkansas area met here May 29 and organized a chapter of the Refrigeration Service Engineers Society.

Directors, all from Springfield, are Michael Cindrio, president; Earl Denny and Charles J. Champieux, vice presidents; M. L. Mercer, treasurer; Wayne Moore, secretary; Harry Hoffman, educational chairman; and E. G. Hendrix, sergeant-at-arms.

Cooling Emphasized In Stove Co. Building

ST. LOUIS—The American Stove Co., manufacturer of Magic Chef gas ranges, has incorporated many of the newest ideas of structural and comfort cooling design in its projected administration building to be constructed in St. Louis.

This six-story building, an outstanding example of contemporary design for large office-type structures, will centralize the principal offices and executive activities at the new location on South Kingshighway Blvd. in St. Louis.

Heating and air conditioning equipment will be in stacked arrangement at one end of the building with individually controlled units for each floor. Stacking the units will leave the major expanse of floor space open within the building's shell.

Radiant heating will be delivered into the rooms through accoustical tile which will perform the double service of absorbing noise and radiating heat. Coils of the heating system will be in the utility stacks at the end of each floor and replacement air will be brought in by electronic filters.

Carrier Corp. Negotiates For $6,000,000 Loan

NEW YORK CITY—Carrier Corp. announced late last month that it had entered into agreements with the Marine Midland banking group and others under which $6,000,000 may be borrowed, with one-half of this amount as a revolving credit and the other half as a term loan.

Funds from both loans will be used principally as working capital. This is in addition to the $4,500,000 set aside for plant expansion, largely out of the proceeds from the sale of preferred stock in January.

St. Louis Dept. Store Adds Air Conditioning

ST. LOUIS—A $2 million remodeling program for the Scruggs-Vandervoort-Barney, Inc., store which will include store-wide air conditioning, was announced recently by Frank M. Mayfield, president, at a dinner in the Hotel Statler, here, honoring employes with 10 or more years' service.

Upon receipt of a Federal building permit, the firm plans other renovations such as the expansion of several departments, new elevators, escalator service to the fourth floor, and an enlarged employe hospital, Mr. Mayfield stated. In addition to improvements on the downtown store, a $1 million branch will be built in Clayton.

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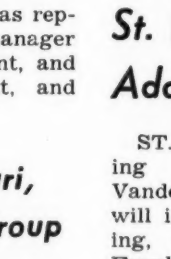

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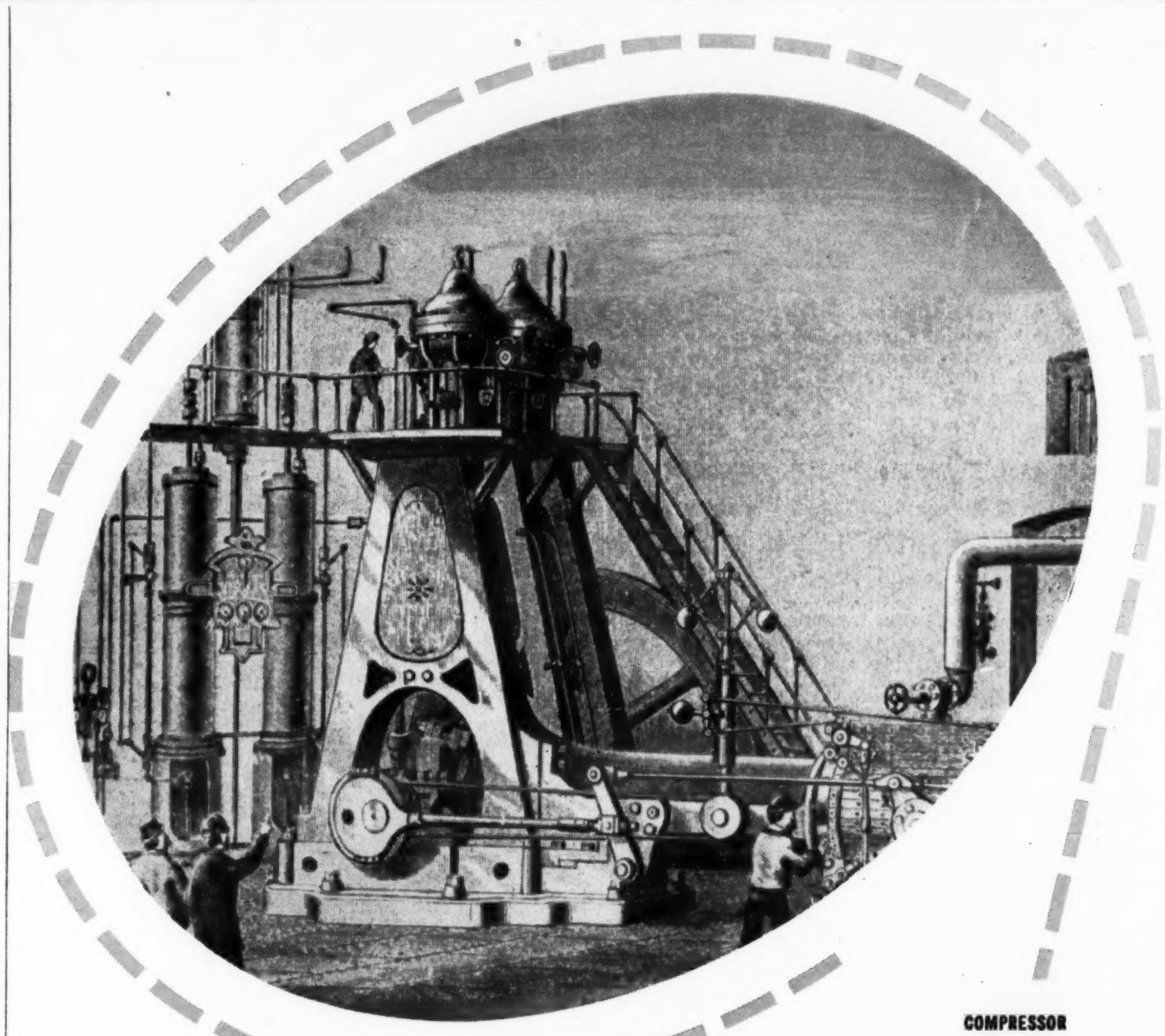


COMPRESSOR from an 1891 Woodcut

PROGRESS

The Rube Goldberg contraption at the right is, believe it or not, a compressor (circa 1891). Note the comparative size of the men.

Below, for comparison, is Baker's popular F6B Compressor, approximately one-hundredth the size of the inefficient Goliath above. That's progress!

But that's just the beginning. Right now Baker is engineering new products which will again raise the standards of the entire refrigeration industry. Watch Baker for progress. Expect big things.

BAKER Model F6B Compressor

Baker

ICE MACHINE CO., INC. OMAHA

MANUFACTURERS OF REFRIGERATION AND AIR CONDITIONING EQUIPMENT SINCE 1905

What Role Should Activated Carbon Play In the Modern Air Conditioning System?

'Air Recovery' Units Can Effect Substantial Savings Under Some Conditions, It Is Claimed

By F. H. Munkelt, Vice President, W. B. Connor Engineering Corp.

Having been for many years closely associated with the research and development of activated carbon air purification equipment and its use in air conditioning, the writer has read with more than the usual interest the articles and letters on this subject appearing in recent issues of AIR CONDITIONING & REFRIGERATION NEWS.

As any air conditioning engineer knows, there are so many variable factors that must be considered in the design of any system that it is patently impossible to assert, with any degree of accuracy, that the use of activated carbon will invariably result in a consistent economy. Climate, occupancy, activity, and building design are a few of the basic controlling considerations.

Extreme Savings Exceptional

While extreme savings have been made in a number of air conditioning installations, such instances are the exception rather than the rule. Nevertheless the average application of carbon air recovery in air conditioning work has made possible substantial economies. A typical example of what it can accomplish is illustrated by the installation in the Criminal Courts Bldg. in New York City.

This building employs 30 separate air conditioning units to serve the court rooms. By installing carbon air recovery equipment to decontaminate recirculated air, the design engineers were able to reduce the outside air intake by approximately 100,000 c.f.m. Without the carbon air recovery units to conserve outdoor air load, they would have needed about 275 tons of additional installed refrigerating equipment and approximately 10,000,000 B.t.u. per hour additional radiation and boiler capacity, based on New York design conditions. Operating savings in fuel and energy, figured on an average heating season of 2,000 hours and a cooling season of 1,000 hours, amount to approximately 90,000 gallons of oil and 122,000 kw. hours of current respectively per year.

It is undoubtedly true that in some instances, even with a reduction in the volume of outside air, the same size conditioning apparatus would still be needed because the nearest smaller size units would be inadequate. Under these conditions no saving could be effected. However, if this is accepted, it must be granted that an equal number of instances will occur where the application of carbon air recovery reduces an excess load to one that can be accommodated by the next available smaller size unit.

For example, where a reduction of 5 tons capacity in a 50-ton system would still require a 50-ton refrigeration compressor, a 55-ton system could, by the use of carbon, be accommodated by a 50-ton compressor instead of needing a 60-ton compressor.

While cost reduction in air conditioning through air conservation has always been, and doubtless always will be, the major field for activated carbon air recovery equipment, there have been countless instances where it has been employed to improve ventilation, maintain better health and comfort conditions, or protect processes and products. For the most part this has been accomplished simply by controlling odors. The end result in these cases, though perhaps hard to assess in terms of dollars and cents, has often been of incalculable value—far beyond comparison with cost reductions in cooling and heating systems.

One plant where a difficult exhaust problem was solved is that of a pharmaceutical manufacturer largely engaged in the production of vitamins. The sulphidic gases, generated in the process and vented into the surrounding residential neighborhood, created an almost intolerable situation. The only alternatives were to move the plant or discontinue a profitable product. A complete solution was found by placing air recovery equipment in the exhaust stream.

As an example of maintaining air intake purity the experience of a large chain store bakery furnishes a good illustration. Located in an industrial area near an oil refinery and a large chemical plant, the building is without air conditioning except for winter heating. Its ventilating system consisted entirely of exhaust fans to dissipate the abnormal heat gain from the ovens and cooling racks. The outdoor air thus induced, however, was sufficiently polluted to contaminate the dough and batter in preparation as well as the bread and cakes after baking, a cause of serious complaints from their customers.

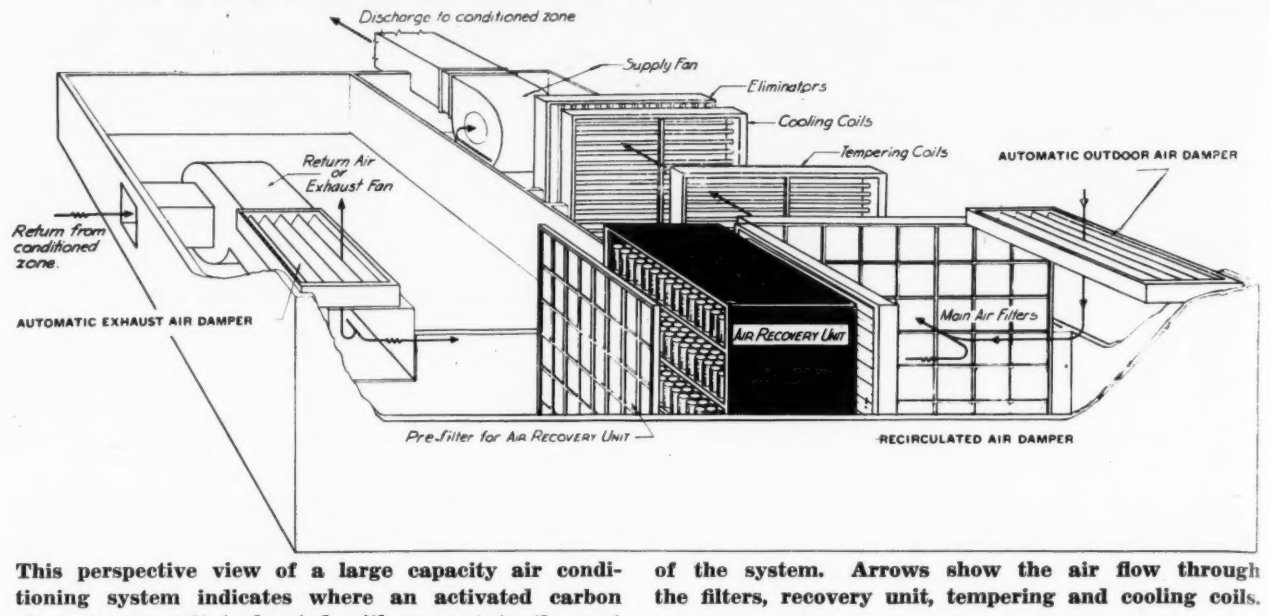
In order to guard against this danger the ventilation system had to be reversed, that is, air had to be *forced into* instead of *exhausted from* the building, first, in order to gain control of all the air introduced to properly de-contaminate it, and second, to maintain a positive internal air pressure and thus prevent infiltration of any untreated air. The forced air supply system, protected by dust filters and carbon gas adsorbers, thus prevented any possibility of spoilage of the bakery's products by impurities from outside sources.

Gases Eliminated

Similar instances in which carbon air purification has been of significant worth, though difficult to express in precise savings, are installations where sulphur dioxide and other gases are eliminated from the air supply. During the war a number of precision instrument plants depended upon carbon to prevent tarnishing. Sulphur dioxide was found to be the cause of oxidation of the silver contact points in automatic telephone exchanges, causing "channel" noises, slight frying or hissing sounds in the circuit.

(Concluded on next page)

Location of Air Recovery Unit In Large System



This perspective view of a large capacity air conditioning system indicates where an activated carbon air recovery unit is located with respect to the rest of the system. Arrows show the air flow through the filters, recovery unit, tempering and cooling coils.

Open Letter . . . to Evaporative Cooler DEALERS

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Dear Mr. Dealer:

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When you investigate evaporative coolers, check into GREAT NATIONAL'S sensational EVAP-O-MATIC Climatic Control.

Here is a development resulting from 21 years of evaporative "know how". It brings the Evaporative Cooler a tremendous stride forward--greatly increasing its efficiency during all kinds of weather--cool or hot, dry or humid.

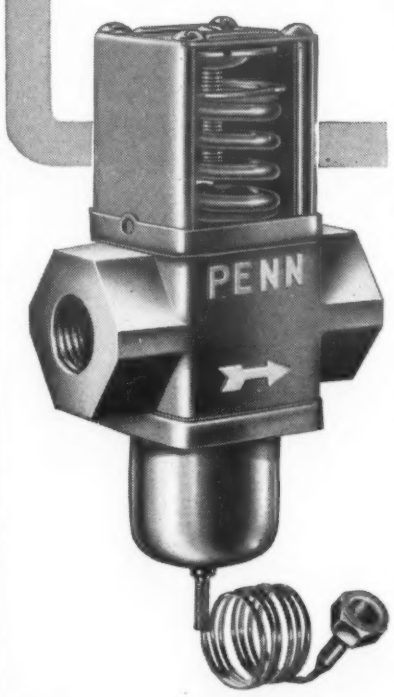
We'll be glad to hear from you.

GREAT 1st NATIONAL IN DESIGN IN PERFORMANCE IN EVAPORATIVE KNOW HOW

President

EVAP-O-MATIC—THE ULTIMATE IN CLEAN, CONTROLLED EVAPORATIVE COOLING

Sliding Parts and WATER Don't Mix



And when they do . . . it means disaster in the shape of rust, corrosion and sedimentation. But the threat of these "destructive three" is rendered harmless by the new and different design of the PENN 246 Water Valve. Here, range springs and sliding parts *never are submerged in water!* Dependable, long-life performance is assured.

Don't take chances with an ordinary type water valve. Be sure with a PENN! This improved water regulator is built in two styles—flanged and threaded—in a wide variety of sizes. Get your copy of the descriptive bulletin. Write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls, Ltd., Toronto, Ontario.

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Purifying Action of Activated Carbon on Recirculated Air Described by Engineer

(Concluded from preceding page)

In the rare book library of a large university the yellowing and deterioration of old volumes and manuscripts was traced to this acid gas. A film manufacturing plant found that gases blown from a phosphorous plant several miles distant were impairing the uniformity of the film's sensitivity. Installations of this type are numerous.

Capacity Stepped Up

Situations where an increase in the capacity of a system is desirable yet where correspondingly enlarged or additional conditioning equipment is not permissible frequently occur. Here, carbon adsorbers, by purifying recirculated air enable the existing system to do a better or larger job which otherwise would have necessitated additional refrigerating or heating capacity. In such instances it is reasonable to credit the application of activated carbon with having *saved* the cost of the additional conditioning apparatus.

The medium which extracts (adsorbs) vaporous and gaseous impurities from the air and holds them in a condensed state, is specially processed and treated granular activated carbon. There are many kinds of activated carbon in commercial use for various purposes. For the clarification of liquors or the purification of drinking water, as an example, a soft carbon of low apparent density with large pores is desirable. Carbons to be used as catalysts are usually prepared with particular regard to the reactions to be produced.

Necessary Properties

For gas adsorption, however, particularly in air purification, the only adequate carbon is one which combines (1) high apparent density yet maximum porosity to conserve space; (2) extreme hardness to resist abrasion during shipment and service and repeated handling for reactivation; (3) highest activity (adsorptive capacity) and particularly, retentivity for *all* of the vaporous and gaseous impurities which commonly pollute air in and around occupied areas.

Further, in the granular form required for this service, it must be precisely screened and graded to insure uniform air penetration and thorough and complete adsorption of the air-entrained contaminants. Such carbon should meet the following minimum standards:

Weight (dry)	32 lbs. per cu. ft.
Apparent Density	0.45 to 0.52
Activity (for carbon tetrachloride)	65%
Retentivity	32.5%
Ash Content	2% by weight
Hardness (Ball abrasion method)	85%
Washed and dried to moisture content not exceeding	1% by weight

When used in air conditioning or ventilation work this carbon must further be specially impregnated.

The gas and vapor adsorbing surface exposed to the air by this type of carbon consists not merely of the relatively insignificant exterior area of the carbon granules but of the enormous aggregate area of the myriad capillaries (sub-microscopic crevices) within the structure of each granule.

It has been estimated, for instance, that if the aggregate exposed surface in 1 lb. of Dorex carbon could be unfolded and extended it would approximate 140 acres, or nearly one-quarter square mile. It is the magnitude of this surface which gives this carbon its great adsorbing and retaining capacity and consequently, its long service life.

It does not appreciably decrease in effectiveness until it has adsorbed approximately 20% of gas and vapor by weight of carbon, independent of water vapor which, though adsorbed, is not retained and does not affect the carbon's activity. When this degree of saturation is reached the unit can be returned to the factory for reactivation, a process which releases and disposes of all adsorbed substances and returns the carbon to its original potency.

That carbon possesses a unique ability to purify has long been known. Marco Polo in the thirteenth century found that in Asia the ashes of certain woods were used to refine sugar. Records show that an English refinery used wood charcoal in the clarification of raw sugar as early as 1794. But it was the poison gas mask of World War I that provided the springboard for activated carbon as a means of removing air-borne gases and vapors. Solvent recovery work, in particular, received a tremendous impetus in the years following.

Practical Development

In 1932 the W. B. Connor Engineering Corp. realized the potentialities of activated carbon in ventilation. An early problem was the one of finding a satisfactory method of passing air through carbon evenly without creating high resistances. Nature supplied the clue—the honeycomb, a structure which exposes the maximum surface in the minimum space. From this inspiration grew the development of suspending the carbon in multiple, hollow, cylindrical perforated canisters so arranged that the assembly somewhat resembles a honeycomb. This design has made possible the distribution of a large quantity of activated carbon in thin beds in a relatively small space, providing uniform intimate contact of all the air with the adsorption surfaces and minimum air resistance.

The term "air recovery" has, to a large extent, become identified with carbon gas adsorption equipment in recent years because its use makes possible the recovery of stale, vitiated, or otherwise contaminated conditioned air. Basically, all applications can be divided into three types; restoration to the desired freshness of air before it is admitted into an enclosure, before it is exhausted, and before it is recirculated. The last type is the most general and has by far the widest application.

Purifying contaminated intake or exhaust air and recovering vitiated indoor air differs in the fundamental approach. In the former the air volume or flow per minute is established and determines at once the air capacity for which the equipment must be designed. It remains, only, to insure that the decontaminating efficiency will be adequate for the result desired.

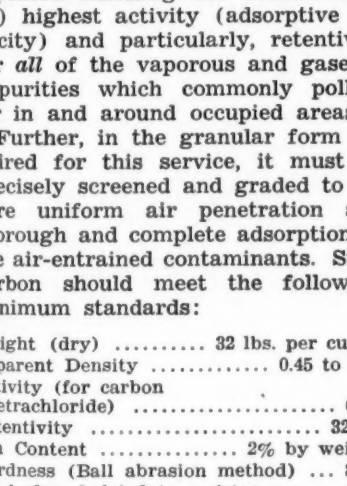
However, when recovering contaminated indoor air, the air is purified *in recirculation* and the process is one of *continual dilution*. The purity of indoor air, or its freedom from odors, depends upon the rate of odor generation and extraction. The air capacity for which the equipment must be designed is determined by the rapidity with which the air must be recirculated and purified in order to maintain the room air quality desired.

Experience Determines Need

In ordinary ventilation practice the generation of impurities is, of course, not measured or weighed, but determined by experience. The preceding is, therefore, simply another way of stating that, for air recovery, the volume of air to be decontaminated in recirculation should be equivalent to the volume of clean outside ventilation air that would otherwise be necessary.

(To Be Continued)

IT'S READY!



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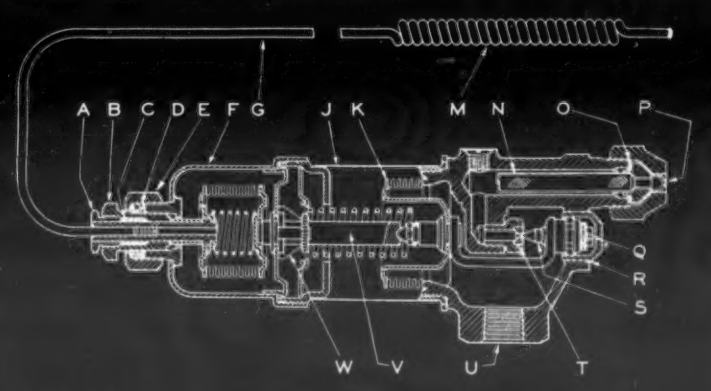

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B. Adjusting Nut
C. Packing
D. Packing Around Adjusting Screw
E. Packing Nut
F. Power Element
G. Capillary Tube
J. Stainless Steel Extension
K. Body Bellows
M. Feeler Bulb
N. Inlet Strainer
O. Strainer Gasket
P. Inlet Connection
Q. Needle Swivel
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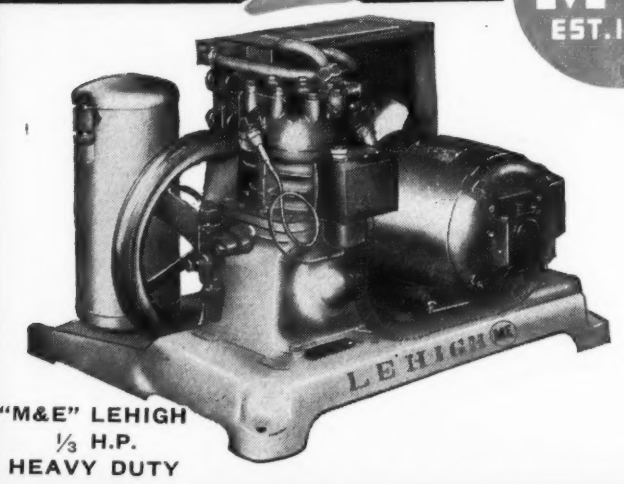

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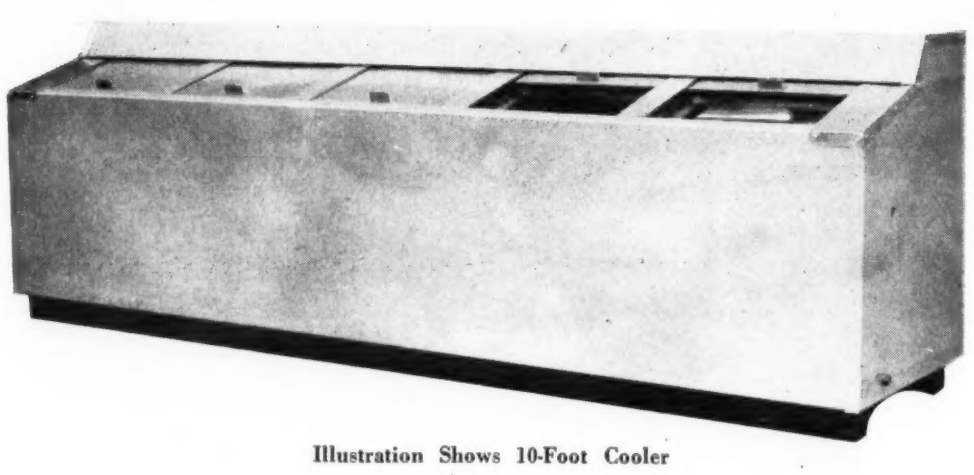

Illustration Shows 10-Foot Cooler

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Frigidaire Issues New Film on Frozen Foods

DAYTON, Ohio — "Frozen Freshness," a new 30-minute technicolor motion picture on frozen food processes has just been completed here by the Frigidaire Division, General Motors Corp.

Incorporating up-to-the-minute information gathered in research by the Home Economics department during the past three and one-half years, the project was filmed under the supervision of Verna L. Miller, director of the department.

Purpose of the new film, said L. A. Clark, assistant general sales manager of Frigidaire, is "to give the public a complete and factual picture of the essentials in getting the most out of frozen foods. This will avoid waste, disappointment, and costly experimentation in the home."

Among Frigidaire's experimental processes depicted in the motion picture are: wrapping and packaging, blanching, rates of freezing, length of storage, and methods of freezing. Also described are the complete steps in the freezing of fresh fruits, vegetables, and meats as well as the freezing of cooked foods, and the preparation of frozen foods for the table.

Free copies of the film are available to home economists, schools, women's clubs, and cooking classes by application to the Public Relations department, General Motors Corp., 405 Montgomery St., San Francisco, Calif., or to the same department at 1775 Broadway, New York City.

York Distributors, Inc. Opens Long Island Office

NEW YORK CITY—York Distributors, Inc., recently organized subsidiary of York Corp., has opened its permanent headquarters at 11-30 46th Road, Long Island City, N. Y., where it will provide an outlet in the New York Metropolitan area for smaller sizes of York air conditioning and refrigeration products.

The operation of York Distributors, Inc., is a supplement to the parent York Corp. district organization in New York (100 E. 42nd St.), which continues to sell the large and more technically engineered installations direct to consumers in the same area and throughout New York State.

W. A. Pusch is president and treasurer of the new corporation, R. C. Follett is vice president and sales manager, and John F. Lebor is secretary.

For DEPENDABLE Refrigerants

SPECIFY "EXTRA DRY ESOTOO" (Liquid Sulfur Dioxide)

"V-METH-L" (Methyl Chloride)

Distributors of

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VIRGINIA SMELTING COMPANY
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Prices:

Jordon 22 cu. ft. Frozen Food Case Will Retail at $680

PHILADELPHIA—Jordon Refrigerator Co.'s 22-cu. ft. frozen food display case—Model 22, SC—may be retailed at $680, it was announced recently by OPA in Order 518, MPR 591.

These other ceilings also were set by the agency: to distributors, $349; to dealers, $408.

The unit is equipped with a ½-hp. condensing unit.

Columbia Electric Gets Prices On 2-Temperature Freezer

SPOKANE, Wash. — Maximum prices authorized for the sale of two-temperature freezers manufactured by Columbia Electric & Mfg. Co. here were announced recently by OPA in Order 517, MPR 591.

Following is the price schedule:

	On sales to—Dealers	Consumers
50-U—2 temp. ¾ hp. condensing unit	$ 657	$1,095
60-U—Single temp. ¾ hp. condensing unit	597	995
195-W—2 temp.	1,200	2,000
125-W—2 temp.	990	1,650

These prices are subject to discounts, allowances, and services equal to those prevailing on Oct. 1, 1941.

Custer Food Freezer, Beer Cabinet Assigned Ceilings

LOS ANGELES — Retail ceiling prices of $580 for an 18-cu. ft. food freezer and $400 for a 60-in. beer cabinet—both manufactured by Harrold M. Custer here—have been approved by OPA.

Announced by the agency in Order 522, MPR 591, the complete pricing schedule is as follows:

	On sales to—Distributors	Dealers	Consumers
A-14 freezer— 18 cu. ft.	$290	$348	$580
Custer beer cabinet— 60 inch	200	235	400

$1,188 Retail Price Is Established For 'Modern Store' Beer Cabinet

SEATTLE—Model P. C. No. 1, a 5-keg beer cabinet manufactured by Modern Store & Restaurant Equipment Corp. here, may sell for maximum prices of $1,009 to dealers and $1,188 to consumers, according to OPA Order 525, MPR 591.

OPA Permits Electrofrost To Retail Freezer at $495

BUFFALO — Order 521, recently issued by OPA under MPR 591, authorizes a maximum retail price of $495 for a 12-cu. ft. freezer manufactured by Electrofrost Co. here.

Equipped with a ¼-hp. condensing unit, the freezer also was given ceilings of $247.50 on sales to distributors and $297 on sales to dealers.

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Ready to Pop in the Oven:

Frozen Pastries Are Encouraging Market for St. Louis Bakery

ST. LOUIS—Quick frozen pastry products, ready to pop in the oven at a few minute's notice, are a new feature of the Pfeiffer Bakery here which has created sensational results in a few month's time.

The Pfeiffer Bakery went into this new phase of frozen foods distribution Jan. 12, when the first refrigeration equipment of sufficient size to handle the job was delivered. Prior to then the bakery had specialized in Red Cross pastry products for USO's, Red Cross air stations, veteran's centers, etc., and built up a lot of experience in small-scale distribution. This knowledge has been applied to baking and freezing of pastries which are being retailed through commercial food freezers at Boark Frozen Foods stores and other retail outlets.

Bakery products which tests show will stand refrigeration and display very well include Parker House rolls, cinnamon rolls, pies and pie doughs, Hot Cross buns, blueberry muffins, French coffee cake, dinner rolls, dollar rolls for parties, all types of fruit pastry desserts, ice box cookies, teacakes, Boston Brown bread, whipping cream cake, and cookie doughs. In addition there are numerous cake and ice cream combinations, ideally suitable for quick freezing.

A new quick freezing department is being built for Pfeiffer Bakery in an adjacent shop on Kingshighway Blvd. here, which will incorporate a 40-cu. ft. reach-in sharp freezer, and a large holding box in which a stock will be kept up against delivery orders.

At present, due to lack of equipment, Pfeiffer Bakery is quick-freezing the above products in a Bishop 16-cu. ft. home freezer, delivering them to retailers in a refrigerated 1-ton truck weekly. The present facilities, in addition to being too small, require up to six hours to sufficiently freeze some bakery items at -15° F.

"Our new equipment will give us -40° F. easily," Carl Pfeiffer, head of the plant, pointed out. "Ample enough to freeze anything in an hour to an hour and a half."

Incidentally, although a walk-in freezer was recommended by National Refrigeration Co., contracting the installation, Mr. Pfeiffer refused this because of danger to the health of bakery employes. Bakers accustomed to working over hot ovens and grilles all day cannot easily shuttle in and out of -40° F. temperatures, according to Mr. Pfeiffer.

Most of the quick-frozen bakery items are frozen in dough form, after being made ready for baking. One exception is an ice cream cake, made up of two layers of ice cream and three of cake, the whole covered with whipping cream. This is baked, "assembled" and frozen, going on display in a handsome white cardboard gift box. Other items are wrapped in cellophane sheets.

"The biggest sales feature is the fact that quick-frozen bakery goods eliminate waste," Mr. Pfeiffer pointed out. "Thousands of families buy more than they need, throwing away the leftovers as soon as they grow the least bit stale.

"Under our system, the housewife can bake half a pie, six rolls, half a loaf of brown bread, etc., to meet the immediate need, with the rest preserved for as long as six months.

"Also, keeping a stock of dessert doughs, pies, cake or roll pastry ready for the oven takes care of unexpected guests dropping in on Sundays or holidays. Our retailers are stressing savings heavily, which is one reason the frozen items have caught on rapidly."

The Pfeiffer Bakery encloses a directions slip with explicit instructions with every frozen bakery item. Due to the lack of sugar, fresh fruit shortages, etc., production has been held down to a small amount to date. When sugar rationing is lifted, however, and with plenty of refrigeration facilities, the bakery will transfer the major portion of its output into quick frozen products.

Commercial Distributors, Dealers Organize Assn. For Eastern Carolina

RALEIGH, N. C.—The Commercial Refrigerator Distributor & Dealer Association of Eastern Carolina was formally organized at a special meeting here on May 15, attended by 32 prospective members and their guests.

A. J. Edmundson, sales manager of First Colony Distributors, Inc., was named temporary chairman of the new group, pending the election of a board of directors at the next meeting on June 27.

The chairman stated that the meeting had as its principal object the banding together of all commercial refrigeration dealers and distributors in the territory to aid each other in solving common problems. He pointed out that "as individuals we can do nothing, but acting together many worth while things can be accomplished. We have it in our power to translate into realities many of the ideals and policies we have hitherto thought beyond our grasp."

Among the guests were H. V. Cunningham and J. C. Bartell, Commercial Credit Corp.; W. S. Barbour, Detroit Lubricator Co.; and M. H. Hicks, of the Carolina Power & Light Co. It is expected that the new association will attract an initial membership of nearly 70 firms in the area, making it the largest group to be organized under the nation-wide plan launched by the Commercial Refrigerator Manufacturers Association some months ago.

Kantner Builds New L. A. Shop

LOS ANGELES—A new refrigeration service building is being erected at 9616 South San Pedro St., Los Angeles, for Philip R. Kantner, of 4037 South Vermont Ave., that city. It will be 25 x 50 ft., and will cost $3,750.

Wenndinger Lockers Given $435 Retail Ceiling Price

NEW ULM, Minn.—OPA has set a retail ceiling price of $435 for a 14-cu. ft. low temperature food locker manufactured by Wenndinger & Son Refrigeration Co. here.

The maximum price was announced by the agency in Order 528, MPR 591, which also included these other ceilings: to distributors, $218; to dealers, $260.

The locker is powered by a ⅛-hp. condensing unit.

OPA Assigns Maximum Prices For Spir-O-Freez Display Case

STATEN ISLAND, N. Y. — OPA has authorized maximum prices of $2,240 to consumers, $1,568 to dealers, and $1,344 to distributors for a 46-cu. ft. frozen food display and storage case manufactured by Spir-O-Freez Co. here.

These ceilings were announced by the agency in Order 532, MPR 591. The porcelain freezer has a 1-hp. condensing unit.

Maytag Profit for First Quarter is $399,068

NEWTON, Iowa—A net profit of $399,068 for the quarter ended March 31, compared to $153,015 for the same period in 1945, is reported by Maytag Co. here. This further compares to $373,919 for the 1944 quarter.

The 1946 profit is equivalent to $1.32 per share on the $3 preferred stock, after quarterly dividend requirements on the $6 preferred stock.

Earnings per common share, after quarterly dividend requirements on $3 and $6 preferred stocks, are given as $.09 this year, none in 1945, and $.07 in 1944.

Net sales for the 1946 period are listed as totaling $4,694,104. This compares to $2,722,046 for the same period last year, and $5,436,806 for the 1944 quarter.

The report shows Federal income taxes of $245,000 for this year's period, $102,000 for the 1945 period, and $692,500 for the 1944 period. The 1944 total included reserve for renegotiation.

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*Servel's new "Supermetic" condensing units will serve dealers and fixture manufacturers in every vital field

1. STORE FIXTURES
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3. HOME LOCKERS
4. BEVERAGE COOLERS
5. VENDING MACHINES
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8. WATER COOLERS
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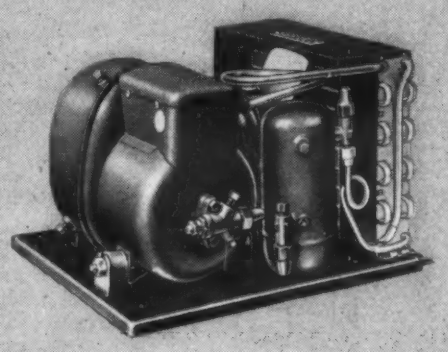
10. VEHICLE REFRIGERATION



Servel, Inc.
Electric Refrigeration Division, Evansville 20, Indiana

This is one in a series of advertisements featuring the scores of new machine tools and processes now being used to produce Servel Supermetics. Reprints are available to dealers individually or in sets as series progresses.

HOW POLISHING PARTS TO 5/1,000,000 INCH PROTECTS YOUR PROFITS

One secret of the trouble-free, sales-making performance of Servel condensing units is the new precision lapping machine shown above. This complicated machine tool polishes crankshafts and other parts to 5 micro-inches (millionths of an inch) R.M.S. or better!

When crankshafts are assembled with bearings and connecting rods which have been micro-finished, they fit so exactly that no breaking-in period is needed. Wear caused by friction is thus reduced to a minimum. So it's only natural that Servel condensing units last longer, are more economical to operate, require less servicing . . . and satisfy even the most exacting customers.

And it's only natural, too, that the profits of dealers and fixture manufacturers are higher on Servel units. The economical, dependable performance of these units keeps customer acceptance high, customer and dealer turnover low, sales and service costs at a minimum.

For information on Servel units that will fit exactly your condensing unit needs, write today for your copy of our free booklet, "Servel Supermetic." Address Servel, Inc., Division RN, Evansville 20, Indiana.

They'll Do It Every Time . . . . By Jimmy Hatlo

EVERYBODY'S HEARD THIS GUY SOUND OFF--AND IT'S ALWAYS RIGHT AFTER YOU'VE BOUGHT SOMETHING---
--YOU SHOULDA TOLD ME YOU WUZ BUYIN' A BOAT. I COULDA GOT IT FOR YOU AT HALF. WHY DI'NCHA LEMME KNOW? I GOT A FEW ANGLES. ANYTHING AT ALL I CAN GET 10% LESS THAN WHOLESALE-- ANYTHING!
HEY, LINSEED--- I'M THINKING OF BUYING MY KID A SCOOTER. CAN YOU GET ME A BREAK ON IT?
HUH? NAW! NOT ON TOYS OR STUFF LIKE THAT NOBODY CAN. IF YOU'D ONLY HAVE ASKED ME LAST WEEK I MIGHTA BEEN ABLE-- THERE'S A NEW LAW NOW---
JIMMY HATLO
3-15
BUT JUST TRY PUTTING HIM TO THE TEST--THEY'LL DO IT EVERY TIME
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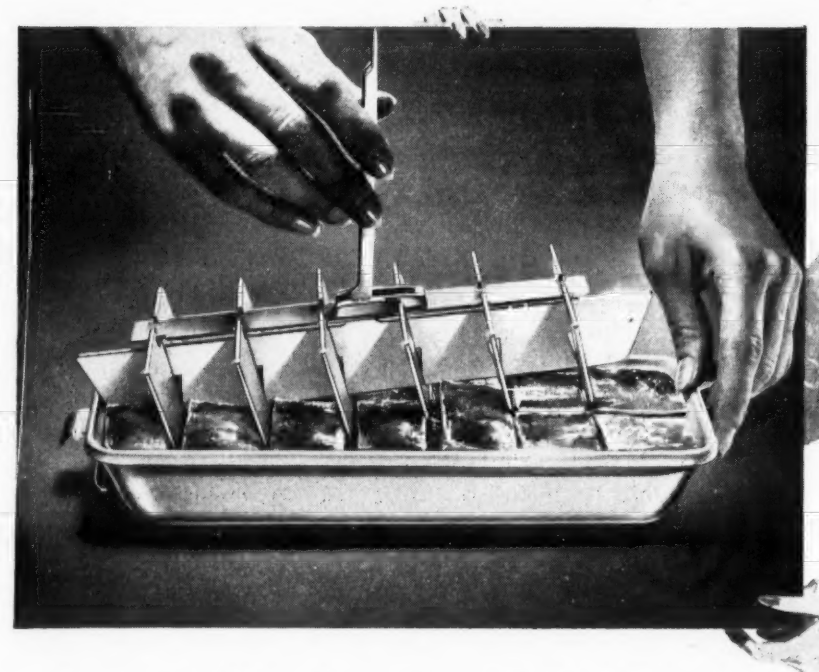

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In a single action ice cubes are easily and speedily released from the Inland Magic Finish Shucker Ice Cube Tray.

Result: maximum convenience in obtaining any number of full-sized ice cubes desired . . . from a tray the operation of which is utter simplicity itself. Furthermore, you get all the ice you freeze. Gone is the mess and bother of obtaining ice cubes by melting them loose from an old-style pan. This ease in operation of the Inland Magic Finish Shucker Ice Cube Tray can be graphically demonstrated and sold.

Automatic refrigerator manufacturers deem it a "must" as original equipment — dealers seek it for replacement sales, while users revel in its convenience.

For details and prices write to
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General Motors Corporation • Dayton, Ohio

IT'S EASY—for Ice Cubes in a Flash!

A slight forward pull of the fingers on the pan lifter instantly and easily loosens the Inland Shucker Tray from the ice box sleeve.

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AIR CONDITIONING AND REFRIGERATION News

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Fast-But Not That Fast!

THE frozen food industry is young, but not small. It is growing at a tremendous pace. In spite of the war, which cut so many kinds of production and specialization down to emergency proportions, frozen fruit production alone, during 1944, jumped 41% over 1943 figures to a new high, according to the Department of Commerce. And that happened in a year when sugar was doled out very sparingly.

The percentage figure quoted is exciting enough, taken alone. But it's a poor indication of the growth of the entire industry during the past five years. It's sensational, but it isn't the whole truth and nothing but the truth.

The total pack of frozen fruits and vegetables (the industry's two major categories) as reproduced recently by *Business Week*, ran like this during the war years 1942-1945 (in thousands of pounds):

Year	*Fruits*	*Vegetables*
1942	221,863	162,558
1943	228,000	230,000
1944	322,638	234,366
1945	310,000	260,000

With one exception, the growth indicated here is gradual and steady. The exceptional entry is the difference in the fruit pack totals for 1943 and 1944—the 41% increase mentioned above. This jump owed its size actually to an extraordinary set of circumstances—usually overlooked:

By 1944 OPA had drastically cut the supply of sugar available to bakers, canners, preservers, and other remanufacturers. But frozen food packers, on the other hand, were allowed to process three specified fruits—apples, apricots, and peaches—almost without limit, and in heavy syrup.

Thus the bulk consumers of processed fruits—the restaurants, hotels, and institutions—bought these frozen fruits in greater quantities than ever before, to conserve their own limited supplies of sugar and preserved foods.

The total packs of these three fruits, especially of apricots and peaches, went up to skyrocket proportions. Here are the figures on them for 1943 and 1944, in thousands of pounds:

Year	*Apples*	*Apricots*	*Peaches*
1943	26,698	9,712	14,458
1944	29,771	39,300	40,095

These three represented, in 1944, fully 89% of the total frozen fruit pack. But the industry cannot take 1944, or 1946 either, as a normal year. When sugar restrictions have been lifted, the complete picture will have some chance to appear in better perspective.

But only when these controls *have* been lifted will normal competition exercise itself, and will the frozen food industry be able to take inventory, without having artificial market conditions and weighted averages distort the actual percentages.

With a tremendous future ahead, the frozen food industry so far is just getting under way. National consumption of frozen fruits and vegetables, for instance, is about 8% of canned food sales, and less than 1% of fresh food purchases.

And the competitive drive of these established opponents is something to stir the imagination. Fresh foods are being precleaned and attractively packaged for increased grocery counter display. Moreover, many present canners are ready to enter the frozen food field as soon as quick freezing equipment and adequate cold storage space become available.

No one who has seen the steady growth of frozen food acceptance during the past five years will deny its highly optimistic future. As the Mississippi Belle's Captain Henry used to bellow to the galleries after the opening number: "F'olks, that's only the beginning, ONLY THE BEGINNING!"

On your next service call... put on "TRAP-DRI" first!

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- May be used with Freon, Methyl, Sulphur.

This A-P "TRAP-DRI" Drier-Filter-Strainer ahead of your expansion valve is a great service time-saver on any system! You get smoother, trouble-free valve operation, prevent freeze-ups, clean up your refrigerant line in a jiffy!

Once on the line, a "TRAP-DRI" starts immediately cleaning out all gummy deposits, scale, dirt, and solder particles. And Moisture or acids in the system are quickly absorbed by the efficient charge of Silica Gel. Gives you "100% protection" against system impurities.

Make the A-P "TRAP-DRI" system-protector a *must* on every job. It saves trouble, time, money later.
Stocked by leading refrigeration parts jobbers. For details, write for bulletin No. 107.

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This heavy deposit of impurities was taken out of a new system by an A-P "Trap-it" (similar to "Trap-Dri" but without Silica Gel).

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Giving Customers Plenty of Service Is Key to Success In Locker Plant

By C. Dale Mericle

LANSING, Mich.—Provide lots of service for your customers if you want to operate a successful locker plant, believes Howard J. Knapp, vice president and manager of Capitol City Locker System, Inc., here, which has 3,500 lockers filled to the overflow point and a long list of patient would-be renters waiting for an opportunity to line up a locker or two for themselves.

So named because Lansing is the state capital of Michigan, the plant is located about two miles east of the city itself, almost to East Lansing, home of Michigan State College, a well known university and one of the leaders in agricultural research.

Expansion Continues

The locker plant was first opened in 1939, and has grown rapidly to its present size, one of the largest in the middle west. It will continue to grow, too, says Mr. Knapp. In fact, there are 300 lockers at the plant awaiting installation, and they'll be placed in service sometime in the near future, he hopes. Like so many things, nowadays, these lockers were shipped incomplete; they have no locks. When locks can be found, in they'll go, and the plant will have 300 more patrons.

Clean and modern in design, the plant is the kind ordinarily seen only in movies. Fluorescent lighting throughout contributes to the modern appearance, as does extensive use of glass block. The clean, well lighted meat cutting and wrapping room, large enough to handle thousands of pounds of meat daily, impresses any customer or prospect.

Back in 1939 the plant was started with some 600 lockers. It was organized by three men on a partnership basis. John Oswald, a vice president of General Motors Corp., was one of the original three, and he now serves as president of Capitol City Locker System. At that time Mr. Knapp, now manager and a partner, was a poultry farmer in the vicinity.

Apparently things didn't go too well at first, for after Mr. Knapp had discussed with Mr. Oswald the possibility of having some poultry frozen and stored for the Christmas trade, Mr. Oswald asked him to come over to the plant and help them out.

"I couldn't see it at first," said Mr. Knapp, who admits that for some time previously he had been idly wondering about the possibilities which a locker plant might offer.

"Mr. Oswald said he couldn't give us much time to think about it, so we finally agreed that I would come over Nov. 1 and take charge of things for 30 days. Well, I've been here ever since."

Over a period of time, one of the original partners died, and the interest of the second was taken over by Mr. Oswald and Mr. Knapp. The growth of the plant is probably due largely to Mr. Knapp's philosophy of keeping the customers satisfied plus his ability and desire to work hard for long hours. His wife, Mrs. Knapp, has also been extremely active in the venture, serving as head bookkeeper.

Works All Hours

The Knapps live in an apartment over the plant, and Mr. Knapp could probably be found working at almost any hour of the night or day.

"For three years I was the only one who ever mopped the place up," he confesses, "and I still get up early every other morning to defrost the locker room refrigeration system."

The plant is laid out completely with an overhead track system. It starts at the loading dock in the rear. Here a chain falls runs on an I-beam pivoted so that it can be swung out over a truck or trailer. Meat hooks are fixed in the carcass of a beef or a hog, and the carcass is hauled up and swung over to be hooked onto a dolly on the track.

From here it is readily rolled into the skinning or slaughtering room, where it is skinned and prepared for chilling and aging room which adjoins. After chilling and aging, the carcass, still hanging from the overhead track, is taken to the butchering room where butchers cut it, and wrap it for freezing.

Many Units Needed

More than a dozen condensing units are required to supply refrigeration to the locker rooms, as well as freezing and aging rooms. In the original locker room plate type evaporators are installed, but the new section is cooled by large blast units.

The Capitol City plant, believes Mr. Knapp, is also one of the few locker plants equipped with an electrically heated smokehouse. Large enough to accommodate as many as 112 hams at one time, the smokehouse is thermostatically controlled to prevent burning of the hams. A few ruined hams hardly helps customer goodwill, he points out.

Avidly interested in keeping the locker patrons thoroughly satisfied Mr. Knapp goes all out on service. He says he has lost virtually no patrons through dissatisfaction. A certain number, of course, have given up their lockers because they moved away, and a few, very few, have decided that they didn't care for lockers. Still others, and their number is extremely small, gave up their lockers when they acquired home freezers, but in most instances patrons continue renting lockers, or at least making use of the plant's processing service, after they obtain a home unit.

Mr. Knapp doesn't like to say "No" to a customer, and so the Capitol City plant has not set up any lengthy list of services and processing operations which it *won't* perform for its patrons.

A number of locker plant operators have done just that during these lush times, declared Mr. Knapp, but he thinks it shows poor judgment.

Applied Psychology

Sometimes he has to use a lot of applied psychology in dealing with the locker patrons, especially when they make a complaint that the food taken from the locker doesn't taste good. Recently, for example, one woman said that the chickens which had been frozen for her and placed in her locker didn't taste good, he recounts.

"Well, I told her I would give her some of mine. This appealed to her, and it seems to me that this is better than trying to convince her by arguments that the first frozen chicken she ate was really all right, when she was certain that something was wrong. After all, we still have to do a lot of educating of the public on the subject of frozen foods.

"So after she had left the plant I took the remaining five chickens out of her locker. After unwrapping them I inspected them and they appeared to be perfect. I decided to rewrap them and put them back in her locker, and then wait to see what happened.

"It wasn't many days until she dropped in to thank me for the chickens and told me how good they tasted."

Maintaining Goodwill

There are times, however, when Mr. Knapp actually does give away some of his own frozen foods. Occasionally a patron will complain that the locker plant has lost one of his steaks, or some other item. Almost invariably this is the result of overflow from the patron's locker. Although the plant makes a special effort to keep close track of frozen foods that have to be stored temporarily outside the patrons' lockers when the latter are chock-full, sometimes a package is mislaid.

In these instances Mr. Knapp will give the patron a substitute. While this is a matter of maintaining and

(Concluded on next page)

Processing Charges at Lansing Plant

Butchering pigs, up to 200 lbs.		$2.00
201 to 250 lbs.		2.50
251 to 300 lbs.		3.00
301 to 350 lbs.		3.50
Meat, cut, wrapped, frozen	(lb.)	.02
Meat aging (per week)	(lb.)	.01½
Time payment, each 30 days	(lb.)	.1
Grinding hamburger	(lb.)	.2
Seasoning and grinding sausage	(lb.)	.03
Curing and smoking hams or bacon	(lb.)	.3
Rendering lard	(lb.)	.03
Chickens, dressing, wrapping, freezing	(each)	.0
Chickens, cut up and ready for table	(each)	.5
Ducks and turkeys, dressing, wrapping, freezing	(each)	.0
Venison, skinning only, per carcass		2.00
Venison, cutting, wrapping, freezing	(lb.)	.2
Partridge, pheasant, prairie chickens, skinning, wrapping, freezing	(each)	.5
Woodcocks, skinning, freezing	(each)	.5
Rabbits, skinning, wrapping, freezing	(each)	.5
Rabbits, killing, wrapping, freezing	(each)	.0
WITH CELLOPHANE, DOUBLE WRAP		
Processing pork	(lb.)	.02½
Processing beef	(lb.)	.03
Processing lamb	(lb.)	.03
Processing veal	(lb.)	.03
Chickens	(each)	.05
Turkeys	(each)	.10
California spiced and precooked hams and bacon	(each)	.50

QUICFREZ Model No. 1245 12.5 Cu. Ft. with Separate Freezing Compartment and Divided Storage.

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REFRIGERATOR MANUFACTURERS FOR OVER 40 YEARS

Operator Outlines Program to Retail Home Freezers Along with Locker Space

(Concluded from preceding page)

improving customer goodwill, it is also based on sound business principles. To locate the missing item, several of the plant's 19 employes might have to spend several hours looking over thousands of pieces of frozen foods. The loss in productive labor would amount to a much greater expense than the cost of a substitute steak or ham, explains Mr. Knapp.

Incidentally, included among the employes are two recent additions: two war veterans are working there under a three-year apprentice program sponsored by the government intended to fit them for managing a locker plant, said Mr. Knapp.

In addition to renting lockers, providing processing, selling his own meat (Mr. Knapp operates a large farm besides managing the locker plant) and national brands of frozen foods, he is also handling a line of home freezers—the Home Locker sponsored by a committee of the National Frozen Food Locker Association.

HOME FREEZER PLANS

As far as he's concerned, the expected boom in home freezers offers no serious threat to the locker plant. In fact, he says, it ought to help. What Mr. Knapp plans to do is this:

"The Home Locker lists at a retail ceiling of about $190. As soon as we can get deliveries I'm going to offer a Home Locker, two years locker rental, and all processing during the two years for a combined price of $250. I'd like to go on the basis of $10 down and $10 a month for the two years."

This combination offer, he believes, should attract a good many sales, and at the end of two years, the buyers should be steady patrons of the locker plant.

Rentals charged by the Capitol City locker plant are $11 for a top door-type locker, $13 for a middle door-type, and $15 for a lower drawer-type locker.

Income from the locker rentals, which amounts to about $45,000 a year, is just about entirely gross profit, revealed Mr. Knapp. Out of the locker rentals he usually pays the electric bill, and, of course, a good share of the remaining is eaten up by taxes.

With the exception of the electric bill, the overhead and payroll expenses are usually covered, or nearly so, by the processing charges and sales of frozen foods, he said. The locker plant sells a considerable amount of meat to its patrons.

HAVE FARM CONNECTIONS

About 80% of the locker patrons live in the city of Lansing itself, with the rest being farmers. Most of the urban patrons, however, have food sources of their own. Some of them own farms, but the majority has relatives or close friends operating farms, and thus can obtain considerable food there, bringing it in to be processed and frozen by the locker plant.

Processing charges at this plant are comparatively low, and Mr. Knapp says he intends to keep them as low as possible, regardless of what eventually happens to OPA price controls.

"Quite a number of operators today are talking about rasing their processing charges," declared Mr. Knapp. "I don't think that's right. Apparently these operators want to make enough money off processing to pay for their locker plants in two or three years.

"Locker plants are not going to disappear in that time. The owner and operator of a plant should figure on paying for a plant over a period of 10 years, not two or three. That's about the way any other business would be operated."

Processing charges at the Capitol City locker plant are shown on the preceding page.

Refrigeration Firm Set Up in Newark to Service Commercial Equipment

NEWARK, N. J.—Kelmore Refrigeration Service, Inc., here, has established an installation, sales, and service organization for all types of commercial refrigerating applications, it has been announced by A. E. Manning, service manager.

The firm also has been authorized to service Kelvinator and Leonard refrigerators in Essex, Passaic, Bergen, Hudson, Union, Middlesex, and Somerset counties, Mr. Manning said. Resident service men are maintained in each of these counties, he added. The firm is service representative also for Easy washing machines in all these counties plus Morris county.

Set up on a self-service basis, the company's depot supplies parts for these units and handles refrigerants and installation materials and tools, Mr. Manning said.

Planned to handle complete overhauls on refrigerators, laundry equipment, and electric ranges, the shop is equipped with a large dehydrating oven, paint spray room, and electric motor repair department.

John P. Langan, former controller and assistant to the manager of the New York zone of Kelvinator division of Nash-Kelvinator Corp., is general manager of Kelmore Refrigeration Service.

Survey Gives Iowa's Locker Plant Breakdown

DES MOINES, Iowa—Sixty Iowa firms are set up exclusively as locker plants, and 105 more represent types of business in which refrigerated lockers are used, according to a survey presented by Paul E. Nelson, of the Iowa State College department of economics and sociology, at the Iowa Refrigerated Locker Association held here May 23-24.

At the closing session of the convention, Roy J. Burns of Carroll was elected president of the Association. Other officers named were: Paul Franzenburg, Jr. of Conrad, first vice president; Fred Peeper of Arlington, second vice president; P. J. Miner of Indianola, third vice president; and Lawrence Lien of Ankeny, secretary-treasurer.

Funeral Services Held At Chicago for Roy Crane

CHICAGO—Funeral services were held here late last month for Roy H. Crane, sales promotion manager of Liquid Carbonic Corp., who died suddenly May 24 of a heart ailment. He was 51.

Mr. Crane, who also was an advertising consultant and writer and speaker on soda fountain management and sales promotion subjects, had been confined to his home at 4000 W. Washington Blvd. since March.

Following the services on May 28, Mr. Crane was buried in Laurel Land, Dallas, Tex. Texas is the native state of Mr. Crane's widow, Mrs. Frances White Crane.

Mr. Crane joined Liquid Carbonic in 1926 as a soda fountain salesman in west Texas. He established such an outstanding sales record that he was brought to Chicago and subsequently organized the sales promotion department.

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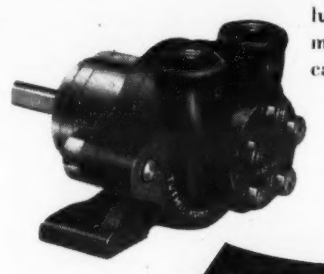

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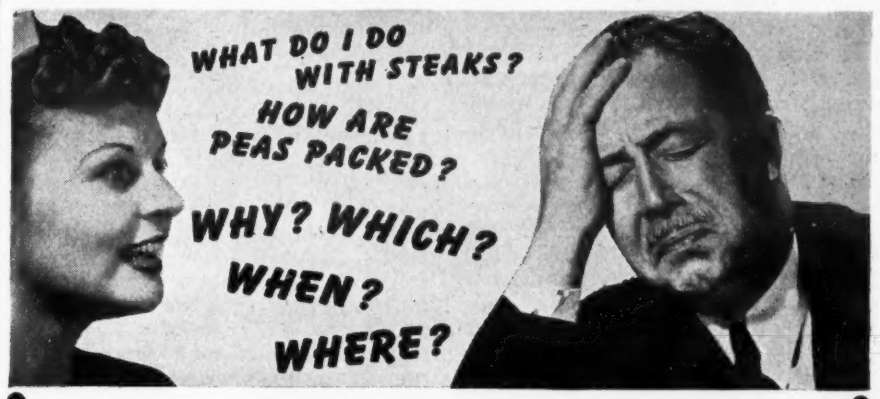

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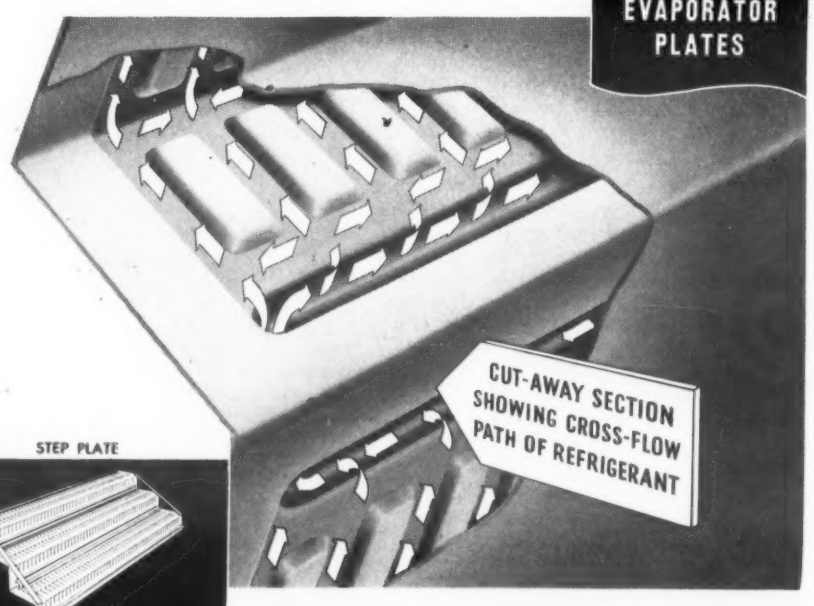
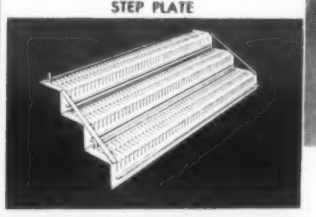
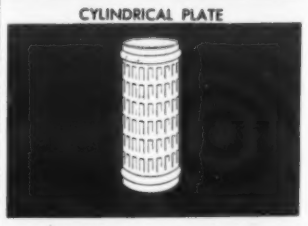


STEP PLATE



CYLINDRICAL PLATE



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The Engineering and Production of a Hermetically Sealed Refrigerating Unit

By W. W. Higham, Director of Engineering,
Universal Cooler Div., International Detrola Corp.

Editor's Note: This description of procedures and methods in the design and production of a line of hermetically sealed condensing units should be of very special interest to those who are active in any part of the refrigeration industry. Seldom if ever has so detailed a discussion been presented of the steps in designing and manufacturing a new line of equipment.

Very early in the history of the refrigeration industry the desirability of a packaged, service free type of compression mechanism was obvious. The answer, a hermetically sealed unit, was simple enough to determine, but the successful accomplishment of it in engineering and production was an assignment of considerable proportions.

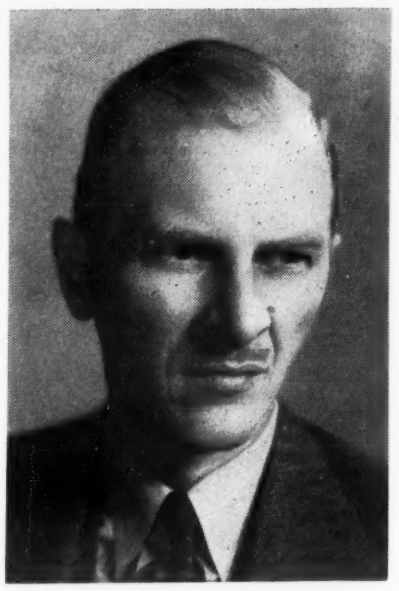
Before releasing a design that would be sure to give the long dependable operating life that would be demanded of it, there was a tremendous amount of engineering research, development, and testing to be done. Similarly arranging to mass produce the final design with a maximum of emphasis on quality was a task in every respect equivalent to the strict engineering of the product.

Fortunately the industry's history on the introduction of hermetic units was available as a guide against all manner of pitfalls. There were both successes and disasters to study and it was easy to see the causes for either. Although the fundamentals observed from such records were helpful in preventing many false moves there was nevertheless no particular lessening of the work necessary to designing and producing a new line of improved models.

Upon deciding finally to proceed with the program extensive studies and tests were made on several different types of rotary and reciprocating models and much research was conducted in patent files for consideration of some designs that had never reached the production stage.

Although admitting to some natural prejudices attributable to a background and equipment wholly devoted to reciprocating units it was nevertheless not difficult to observe that a decided majority of the more important factors favored this mechanism for use in a hermetic compressor. Performance test results proved it equal in every respect to any other design. From a standpoint of cost it was definitely in order and manufacturing wise it presented by far the fewest and least complex problems.

The first models built for laboratory work as early as 1935 were



W. W. HIGHAM

especially designed and constructed to give optimum serviceability, and yet to incorporate basically the desired features of hermetic sealing.

For example, the outer housing was a bolted assembly rather than welded and similarly the cylinder heads and valves were arranged to be readily accessible. If for any reason it became interesting to check or replace any of the working parts, the operation could be accomplished with a minimum of difficulty.

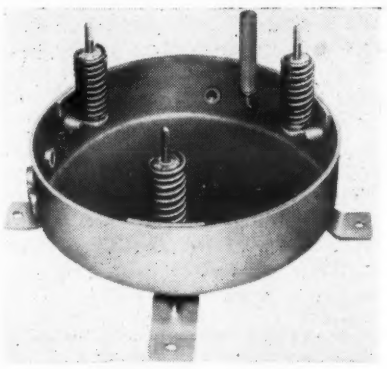
The advantage of these construction features revised slightly to protect against unauthorized field repairs coupled with the limited production that could be planned as a result of the war's imminence prompted the release of this first tested design for a substantial field trial. Although such a small program was extremely costly, the overall wisdom of it has been many times proven by the excellent field performance results thus obtained and the valuable information that has been accumulated.

Throughout the war era long term life and breakdown tests were continued with automatic recording instruments from whose voluminous data very informative summaries could be deduced. From accurate and detailed field and factory service reports maintained in connection with this program reliable indications of any weaknesses were so pointed up that a reasonably correct determination of their frequency and the unit age at which they might be expected could be ascertained. As time permitted engineering changes were made in parts where field and laboratory findings gave evidences of their need.

The performance results of the field tests had been so satisfactory and later laboratory developments of the same nature were so encouraging that there was no hesitancy at the war's end about proceeding with a program that would equal realistic sales forecasts.

Throughout the development stages manufacturing had intentionally been kept informed of all engineering work on the project as it progressed and were as a result able to expand, rearrange, and retool the present factory for the high production capacity required. Schedules were immediately established for a large long term purchasing program.

Housing Assembly



Lower housing assembly for single cylinder models showing internal spring mountings.

Before covering manufacturing activities, the engineering features of design and construction of these units will first be pointed out and explained. The sealed motor compressor assemblies are currently five in number and are rated at one-eighth (⅛), one-fifth (⅕), one-quarter (¼), one-third (⅓), and one-half (½) hp.

All models are of the vertical shaft type with the motor on the upper end of the crankshaft and the connecting rod on the lower end partially immersed in oil.

The smaller two sizes employ a single cylinder compressor and the assembly of the motor and compressor is internally spring mounted to the lower of the two heavy steel stampings which are welded to form the housing or enclosure assembly.

The larger models include a twin-cylinder compressor and have their motor compressor assembly mounted rigidly by means of a press fit to the upper part of the housing.

Reason For Mountings

Primary reason for adopting the internal mounting arrangement was for noise elimination and on applications of these small units this factor was expected to be an important consideration. This type of mounting for the twin cylinder models was voided, first, because it was not believed that a normal noise level would be objected to particularly by reason of their use usually in commercial applications, secondly because enclosing this arrangement required too large dome, and thirdly and most importantly on the larger size units such a mounting did not provide sufficient motor heat dissipating capacity.

Using the same compressor bodies at different horsepower ratings necessitated varying the bore and stroke and making different combinations of them. All bore diameters were held to 1.1250 in. except for the ½ hp. size where this dimension was increased to 1.1875 in.

Stroke dimensions similarly were held to two in number, namely .5625 in. for the ⅛ and ¼ and .7500 in. for the other models.

Aside from the foregoing mentioned design variations the one and two cylinder motor compressor assemblies are very much alike. Their enclosing case consists essentially of the two heavy (10 gauge) deep drawn stampings to which various fittings and brackets have been integrally added by the controlled atmosphere brazing process. The fittings thus included are for the electric terminals, the refrigerant inlet and outlet, and the charging valve. Brackets added are for the units' self-support, condenser support, relay and overload protection for the internal spring mounting necessary on the single cylinder units.

Before performing the final weld of the two domes other miscellaneous parts are assembled to the fittings mentioned above to insure their being perfectly sealed. The larger or upper of these dome assemblies slips down over the lower to a fixed dimension of ½ in. and on the external perimeter of this overlapping joint a full electric arc weld is performed by an especially designed automatic machine to complete the final seal of the assembly.

Both compressor bodies are made from annealed close grained alloy iron castings that under correct machining methods produce exceptionally fine bearing surfaces in the cylinder bores. Other parts of the same material are the valve plates, cylinder heads, and upper bearing housings.

To insure consistency of these parts, as well as all others where metal constituent and processing specifications have been issued, frequent quality control analyses are made.

Muffler Is Provided

On single cylinder bodies to one side of the bore and on the twins between the bores a substantial cavity is integrally cast to act as a muffler chamber for the discharge pulsations when the units are operating. A noteworthy feature of this design is that the whole mass of the casting plus the mass of all other parts assembled to it are directed toward deadening the noise produced in this manner.

High tin content Babbit metal bearings are employed for the crankshaft journals in the compressor bodies and upper bearing housings. Their location was computed to give perfect support to the rotating shaft at all times and to insure equalized loading thus completely eliminating the possibility of any concentrated wearing action.

In addition extra length and correct depth of metal were provided as additional assurance for their long life. Correct alignment of the bearings is achieved by mating a precisely dimensioned circular shoulder on the upper bearing housing with an equally precisely dimensioned counter-bore on the body.

Crankshafts are made from meehanite super grade A material which can be satisfactorily case hardened by the induction method to provide a hard durable bearing surface and yet retain a tough center core. Neither the single nor double eccentric shafts are balanced, however, their unbalance is offset by having the exact counterbalances required added to the motor rotor into which the part is pressed. The balance thus achieved is designed and is not accomplished by any manufacturing operations after their assembly.

How Oil Is Pumped

The crankshaft aside from its normal function is additionally used to pump and distribute all the lubrication required at bearing surfaces. By means of a small vane type rotary pump located on the thrust plate or lower side of the compressor so that it is always immersed, oil under positive pressure is forced through a drilled hole located at the center of the crankshaft and led off through radially drilled holes and connecting grooves to the bearing areas.

To provide piston pin lubrication at a location coinciding with the oil outlet on the crankshaft the larger bearing of the connecting rod is grooved for 90° in advance of a drilled hole extending between its bearings so that oil can be forced to the smaller one.

On the single-cylinder models the center hole in the crankshaft extends through its full length and a slinger is fitted to its upper opening so that the excess oil pumped is thrown against the dome to dissipate some of its heat.

The arrangement on the twin-cylinder units is different in that the center shaft hole only extends to the upper bearing housing. From here the oil is conducted through a radial hole to an oil groove one end of which extends beyond this bearing so that the excess oil pumped spills out and flows over the compressor body.

By slightly indenting one side of both suction tubes as they enter the compressor heads on the twin cylinder blocks enough oil is entrained from that which flows over the cylinder heads by an aspiratory effect of the entering refrigerant vapor to lubricate the inlet and discharge valves as well as the pistons and the cylinder bores. Adequate lubrication for these parts on the single cylinder models is absorbed by the refrigerant vapor inside the dome before it enters the suction line.

The vane of the rotary pump discussed above is an accurately molded

(Continued on next page)

Sketch of Twin Cylinder Compressor Assembly

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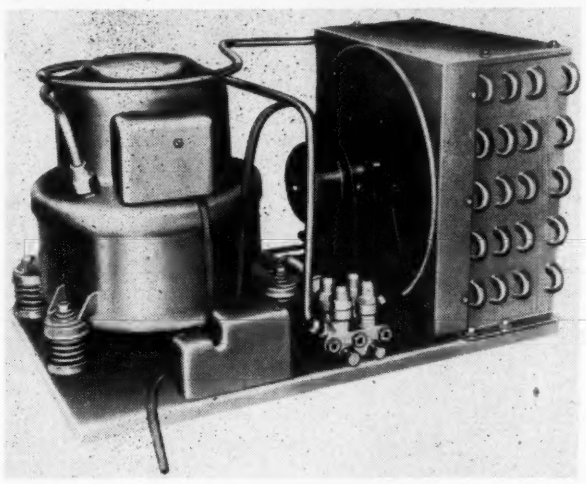
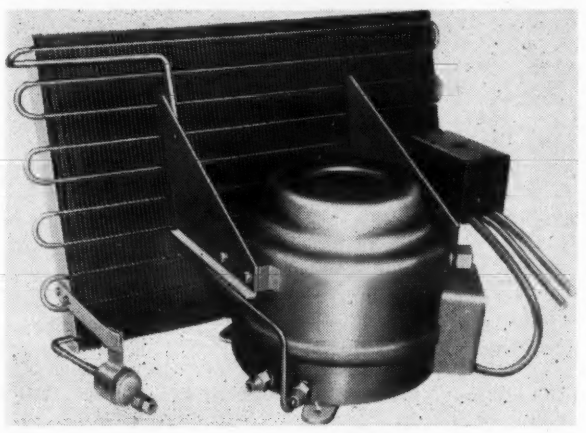
Assembly With Forced or Natural Draft Condenser



Universal Cooler hermetic condensing unit using forced convection type condenser.



Same type of hermetic compressor assembled with gravity type or natural draft condenser.

Designing a Hermetic Unit--

(Continued from preceding page)

morganite carbon blade that has been treated with a special copper lead alloy impregnation process. In operation both of its ends seal and wear against the wall of a ground steel cylinder that is set off center with the crankshaft so that the vane in being rotated by the shaft displaces twice the eccentric volume between the shaft and cylinder each revolution.

It has been interesting to observe that inspection of the vanes as well as the enclosing cylinder after several years of overload testing have revealed no changes in dimensions as measured with micrometers.

The weight and end thrust of the crankshaft is borne by a finished ground plate made from SAE 1045 steel that has been case hardened by the induction method. Under long term emphasized endurance tests neither the plate nor the crankshaft have revealed any appreciable wearing.

Materials In Compressor

The material selected for the pistons is a high nickel chrome cast iron with which much favorable experience has always been had on applications of this nature. A very accurate heat treating process and extremely precise machining and grinding operations are performed to assure the parts being as near perfect as modern methods can produce.

For the wrist pins a case hardened carbon molybdenum SAE No. 4023 steel is used and for the accuracy of dimensions required of this part, it is finally attended with "super-finish" lapping operation on centerless grinders.

Connecting rods are another item where extra emphasis is given to quality. Castings of SAE No. 64 bronze are used to make doubly sure of a good mating of bearing metals and in addition give the parts the structural strength required of them. As with the pistons, crankshafts, bodies, and such like parts as require it the very maximum of attention is similarly paid to the methods and processes employed in making these parts.

Suction and discharge valves will again be made from Swedish crucible steel which has proven itself in this industry as the only material that will match the performance requirements imposed on it when used for this purpose. In assembly the valves seat against a ground and lapped plate made from a very close grained alloy iron.

As indicated before motor rotors include designed counterweights to offset the unbalance condition in the crankshafts. Developing this balance design to a degree that could be absolutely depended upon in production required much careful study and testing.

The solution to this problem was not simply one of balancing certain dead weights, but involved determination of centers of masses, consideration of their distance relationships to each other as well as to their common center of revolution, and all subsequent coupling effects that might possibly be induced. The results obtained appear to duplicate the original intentions.

Both the rotors and stators are subject to a strict specification covering their general cleanliness and dryness, and instructions given for packing and handling them are rigidly adhered to at all times. Sealed moisture proof cellophane envelopes that each include a substantial package of silica gel dehydrating material are used as the immediate wrappers for the stators and rotors individually to protect them against dust or other foreign matter, and from absorbing any moisture from the time they are produced until they are assembled into motor compressor units.

Further protective measures include the requirement that stator windings be made from Formex insulated wire or its equivalent, that all paper used must be highest quality lint free 100% rag content stock and that all cotton materials employed must be bleached, purified, and lint and sizing free. Before the stators are pressed into the compressor bodies a high potential test inspection is made to insure against any shorts in their circuits.

On the ⅛ and ⅙ hp. size units only split phase motors are employed. For the ¼ and ⅓ hp. size units, however, either split phase or capacitor start motors are used depending on the application for which the unit is intended.

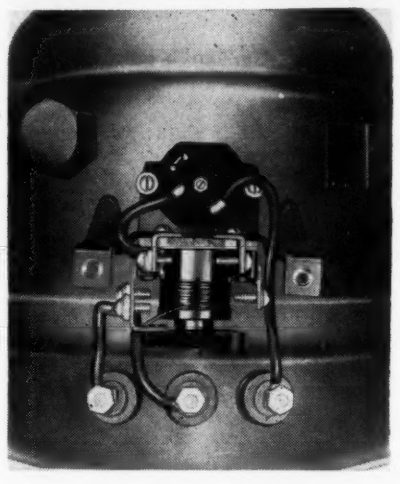
The capacitor motor is provided where high starting torque requirements exist such as refrigerating systems having expansion valves for pressure reduction. Units having split phase motors are used on capillary equipped systems where approximately balanced pressures between the high and low sides are attained in the off cycle so that starting requires but a minimum or torque. One-half horsepower models on the contrary have only capacitor motors.

Specifications covering all motors require their satisfactory operation on 10% line voltage fluctuation and on either 50 or 60 cycle supply.

Much attention was given in design and test to selecting electrical relays and overload protective devices that would be dependable and long lived. To act as the safeguard against electrical overloadings and overheating of the unit a bimetallic disc operated switch was mounted within very close proximity of the upper dome's external wall for the latter purpose and for the former a heater coil that reflected abnormal current usage was integrally assembled to the complete device in close relation with the sensitive element.

Permanent and effective sealing of the electrical terminals on the motor compressor case assembly is accomplished before final welding with an arrangement of laminated plastic

Relay & Thermo Guard



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washers and spacers and a molded rubber packing bushing held together with a simple series of steel screws, washers, and nuts.

By drawing the nut up tight compression is exerted on the rubber bushing to distort its shape in such a manner inside the housing fitting so as to produce a very positive and strong seal.

Assembly Standards

Like the parts, numerous assembly operations had to have strict engineering standards set for them. For example, the assembly of piston, wrist pin, and connecting rod and the mating of the piston to the cylinder bore of the compressor body must be attended with a maximum of care and precision.

Wrist pins are specified to be fitted by light press to pistons within 0.0001 in. and to connecting rods within 0.0002 in. Pistons must be matched to cylinders within 0.0003 in. to 0.0005 in. Wrist pins are to be tight in pistons, but the fit of the connecting rods to them is to be free running. The fit of pistons in cylinders must, of course, be smooth and free running.

Other close tolerance fits that must be controlled very accurately if performance and long life are to be had are interesting to note. For example, connecting rods and crankshafts are held within 0.0007 to 0.0011 in. of each other and are selected to have a good running fit.

Crankshafts and their supporting bearings have their mating diameters maintained within 0.0005 to 0.0009 in. and must like the preceding mentioned parts run with the least possible amount of friction.

The upper housing bearing is aligned with the compressor body bearing by having the outside diameter of the male shoulder on the former and the inside diameter on the corresponding counter bore of the latter held within 0.0001 to 0.0008 in.

Stators are pressed into compressor bodies on limits of 0.0005 to 0.0040 in. and rotors are pressed onto shafts on limits of 0.0014 to 0.0022 in. The limits for the air gap between the rotor and stator is 0.007 in. minimum and 0.013 in. maximum. On the twin cylinder models compressor bodies are pressed into upper dome assemblies on limits of 0.0005 to 0.0035 in.

The single-cylinder models unlike the twins are not pressed into the domes, but are as previously indicated internally spring mounted. After determining that such support was feasible from thermal angles the mechanics of the design were arrived at only after much thought and development.

It was recognized that the first requisite of the mount was that it had to relieve all unit vibrations and secondly it had to be locked so effectively that it would be impossible to free the motor compressor unit within the sealed dome assembly. To absorb vibrations it was necessary to make careful analyses of mass concentrations and rotational and reciprocating affects and to determine accurately the points for as well as the strength of the supports that would best accomplish the purpose.

Locking the springs as described was rather simply achieved by blocking them in position so that they could not possibly twist loose through the range of motion that was available to them.

Before determining the condensers, strainers, dryers, fan motors, and other parts required to make complete condensing units thorough and careful testing of the parts as details and in complete unit assemblies had to be done to make certain that they would perform in accordance with rigid specifications issued to cover them.

After the design of the hermetic units was sufficiently completed to release, the second phase of the program lying ahead was the task of producing them. The difficulties of this assignment were intensified by the necessity of not only continuing the open type condensing unit activity, but increasing it to at least twice its best prewar rate as a minimum.

Some projected sales plans revealed requirements that were 400% of the maximum monthly output before war production began. Such production it was determined could have been attained without any increase in facilities but with preparations being made for manufacturing the new hermetics coupled with the rapidly accelerated schedules on them it was in order to adopt a lower more reasonable delivery forecast.

To insure the orderly conversion of the factory the overall plans of the program were quickly formulated. Tooling and processing equipment requirements were first to be determined after which rearrangement and expansion layouts were prepared. Next followed the purchasing of the required capital and expense items as well as the physically incorporated materials for the units, then the compiling of all delivery information, and finally the detail planning and scheduling of the whole activity.

As may be inferred the re-equipping and rearranging of a vigorously active and comparatively overloaded machine and assembly shop, and the addition of another area of half that size with all its facilities was a job of no small proportions. Fortunately, there were no complications imposed for want of appropriations. General instructions had been issued to buy the best equipment that could be had, but as long as there were no effects on the quality of the units the most economic measures were usually adopted.

Quality of the final product was established as the first fundamental consideration and every possible emphasis was directed to this end. Machines and tools were selected because they would consistently produce parts according to their dimensional and finish specifications.

Similarly methods and routings established were those known to be most accurate and dependable at all times in making exactly duplicate and completely interchangeable parts. Frequently even closer tolerance machining or grinding operations than were needed to meet engineering

(Concluded on next page)

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Production Methods For Hermetic Units--

(Concluded from preceding page)

drawing requirements have been established for a part to improve the assembly that included it.

In addition the latest type quality control equipment and gauges for measuring dimensions held within a ten thousandth of an inch and for measuring surface finishes within a hundred-thousandth of an inch were procured.

When alignment, out of roundness, concentricity, and other similar features were critical to machined detail rough and finish turning and grinding operations have been provided to protect against the induction of any stresses and to assure the parts complying with all such specifications.

Where surface finish is important, finish boring is always followed by burnishing on bearingizing tools or by honing and burnishing. All accurately finished surfaces are held within a tolerance of not more than five micro-inches (0.00005").

Reducing Damage Factor

To eliminate possibilities of errors attributable to operators full cycle automatic machines have been used as much as possible. All machines have been equipped with gauges mounted on the equipment or have been otherwise supplied for the user's convenience so that every piece produced can be quickly checked. Immediately as operators determine a part not gauging properly they have been instructed to shut the machine down and request its correction according to inspection's satisfaction before proceeding.

Especially designed parts-carrying boxes or other types of mechanical equipment have been installed to reduce damages resulting from improper handling to the minimum. Whenever machining times could be synchronized with power driven conveyors, parts are moved from one operation to another by such means.

In instances where this method of handling was not adaptable, gravity type roller conveyors were employed. As a result of these provisions for handling material, production flows much more smoothly and the rate of output as well as individual piece part costs have both been improved.

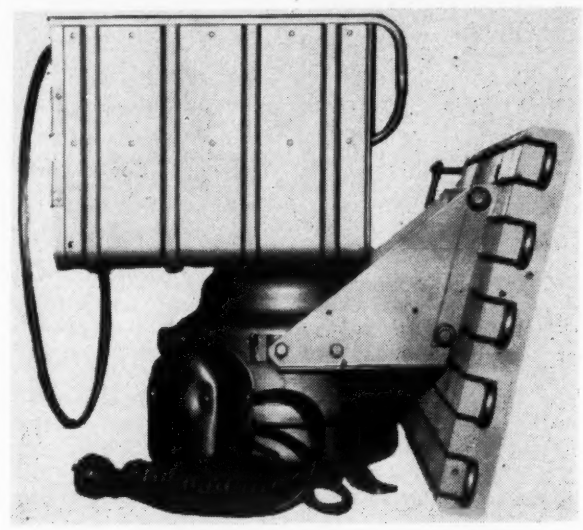
The necessity of cleanliness of parts has been particularly stressed and adequate sand blasting, washing, and degreasing equipment of the latest design has been installed for this purpose. Inspection control points have been instituted after each process to make certain of its effectiveness.

Similarly in machining instructions for cleaning have been specified for both the tools and the parts and all operators have been thoroughly informed and impressed of the reason and importance for such cautious measures.

Air Conditioned Assembly

Assembly of the motor compressor presents operations equally as critical to the product's quality and performance as the designing, processing, and machining of the parts. The first step taken in preparing for such assembly was to provide a room having a constant temperature of 75° (plus or minus 1°) F. and a relative humidity of 40% (plus or minus 5%) supplied with 10 changes per hour of air that has been cleaned with electro-static filters.

Side View of Complete Household System



This is the side view of the complete household refrigerating system (nested for shipment) showing compressor, condenser, and evaporator.

To prevent the entrance of air that has not been filtered a positive pressure is maintained inside the room and as a further precaution from dust, lint proof uniforms are worn by all operators and visitors in the room.

Adequate volume is provided in this air conditioned area to permit the storage of the critically dimensioned parts in quantities sufficient to allow them ample time to reach room temperature before final inspection and classification.

Parts requiring size classification include compressor bodies, pistons, and wrist pins. Other machined parts not classified, however, but requiring tempering storage are crankshafts, connecting rods, valve plates, valves, thrust plates, oil pump cylinders and vanes, stators, rotors, and domes. No parts are used in assembly when their temperature differs from the normal conditions of the room.

After the motor compressor subassembly has been built it is given a complete functional inspection for refrigerating capacity, oil pumping, electrical consumption both at starting and during running, and for performance under abnormal current supply conditions on test equipment that is in every respect equivalent to laboratory instruments used for the same purpose.

When these tests are passed the assembly of the motor compressor and domes is completed and with a slight nitrogen pressure maintained internally an automatic arc weld is performed to seal the overlapping joint of the domes. After the weld has cooled sufficiently a starting check is made before attaching the unit to a conveyor. The assembly is then charged with dry air having a dewpoint of minus 60° F. and under 250 lbs. per sq. in. gauge pressure and leak tested by observing for air bubbles when immersed for two minutes in an illuminated tank of warm water.

After relieving the internal pressure and drying externally with an air blast the assembly is next conveyed through a prime coat paint tank to the baking ovens where for four hours under a temperature of 300° F. and a 50 micron vacuum (.050 millimeter absolute pressure) it is dehydrated and evacuated of undesirable gases well within safe limits. The unit is now ready for final assembly into either a condensing unit or a complete refrigerating system and is accordingly transported to the proper location.

Other items of the condensing units or refrigerating systems such as condensers, receivers, evaporators, and lines are given similar processing as outlined above before final assembly. Their dehydration and evacuation process is, however, slightly revised by limiting the baking time to two hours and increasing the temperature of the oven to 350° F.

Lower Baking Temperature

Although identical results were achieved by both methods on their respective parts it was determined that the shorter and obviously less costly one was not applicable to the motor compressor assembly.

First the higher temperature was likely to be injurious to the insulation on the stator windings.

Second, because of the mass and complex internal structure a longer interval of exposure was required to bring the unit up to temperature and dehydrate it sufficiently to meet the dryness specifications.

On the final lines the order of processes for condensing units or refrigerating systems after they are complete except for electrical equipment is of the following pattern. They are first prepared for and subjected to an immersion leak test exactly like that described for the motor compressor. Immediately as the internal pressure created for this test has been relieved and the assemblies have been dried they are given a final coat of paint and passed on to refrigerant and oil charging stations. At this point they are evacuated to 50 microns of pressure and correct charges of "Freon-12" and oil are added by means of automatic electrical devices.

The unit is next given a thorough halide lamp leak test after which electrical parts are added and a short running test is made. Thus prepared and approved the assemblies are finally packaged.

In proof of the value of the equipment and methods used in manufacturing results obtained from engineering tests on production units have continued to show more refrigerating capacity, higher efficiency, and less electrical consumption than the best similar data accumulated on any engineering samples made by model shop methods.

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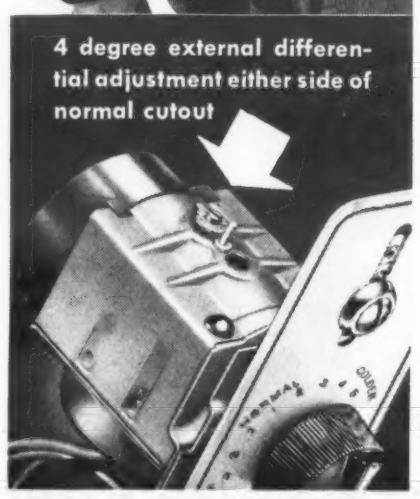

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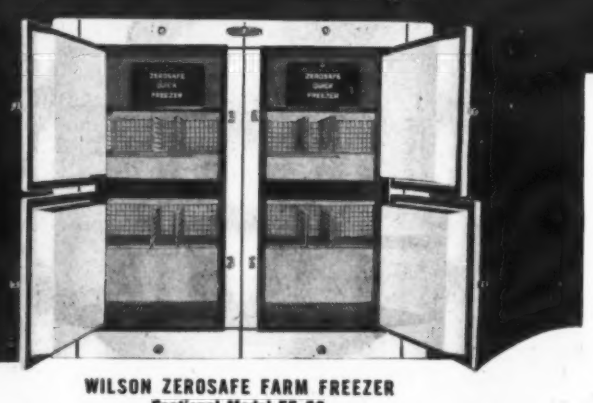

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ASRE To Pass on Refrigeration Courses--

(Concluded from Page 1, Column 4)

neering degree from an accredited school or the applicant must be working with refrigerating engineers. At age 28, a Junior member shall automatically be transferred to Associate grade unless he applies for and is accepted as a Full member. Dues shall be at the discretion of Council, but it is suggested that the annual dues be $7.50.

3. The present Associate and Full member grades shall be retained as now defined but dues in each grade shall be identical.

4. All grades of membership shall be entitled to all publications, but Abstracts will be sent to Student, Junior, and Associate members upon request only.

EDUCATION COMMITTEE

The A.S.R.E. Education Committee reported that arrangements had been completed for the Society to cooperate with the Engineering Council for Professional Development in the rating of refrigeration curricula at the Technical Institute level. Five A.S.R.E. members were recently appointed simultaneously to the A.S.R.E. Education Committee and to the E.C.P.D. Regional Accrediting Committee.

The E.C.P.D. is a joint body which has been designated by its member societies (which include the leading professional engineering groups) for the accrediting of enginneering and technical curricula in the U. S. The country has been divided into eight regions, with A.S.R.E. representatives named for each regional.

FOR TECHNICAL INSTITUTES

A technical institute program is classed as one technical in nature, but intermediate between high school and vocational schools on the one hand, and engineering colleges on the other. General purposes of such programs are to prepare individuals for positions auxiliary to those of professional engineering. Such curricula are usually briefer and more intensive than collegiate engineering curricula, but do not include artisanship training within their scope. A considerable variety of institutions offers technical programs coming within these definitions.

Any school desiring accrediting of a technical institute type of refrigeration curricula may forward such a request to the A.S.R.E. headquarters, which will pass it on to the E.C.P.D. Charges made for inspection of curricula are $100 for the first curricula, and $50 for each additional one.

The Education Committee in its report stated that "it hopes that this may be considered as an initial move in a program to back the reputable engineering schools, technical institutes, and eventually possibly the reputable vocational schools.

PART OF BROAD PROGRAM

"It is hoped that by such means as this," it continues, "the Society can cast favor upon those educational institutions which are of definite value to the refrigeration industry and to the students enrolled in them, and that the Society may aid in the repression of the fly-by-night schools and the 'racket' institutions."

In the report of the A.S.R.E. Standards Committee it was revealed, in the discussion of the activities of the Committee on Home and Farm Freezer Standards, that at a meeting held May 3 in New York City, a sub-committee was formed, under the American Standards Association Committee B-38 on Home Refrigerators, to take over this work as an A.S.A. project.

HOME FREEZER STANDARDS

Dr. E. C. McGracken of the U. S. Department of Agriculture, a member of the A.S.R.E. committee, is chairman of B-38. It is anticipated that the proposed standard developed by the A.S.R.E. committee will form the basis of the B-38 sub-committee deliberations. Prof. J. C. Nicholas of Penn State College and A. J. Donniez of the Good Housekeeping Institute of New York City are the A.S.R.E. members of the new sub-committee.

Copies of the Proposed Commercial Standard TS-4044 on Air Cooling Coils have been sent to members of the Standards Committee, and a number of replies with comments have been returned. These will be passed on to the Bureau of Standards.

The report points out that this Code originated with the Blast Coil Manufacturers Institute and that there seems to be considerable conflict between the proposed Code and A.S.R.E. Circulars No. 13 and No. 25. It will probably be necessary, the report stated, that this matter be referred to the proper A.S.R.E. Technical Committee for further study and comment.

Because of insufficient space in this issue to publish material in chart form, it has been necessary to omit the usual instalment of the series of articles "Refrigeration Problems and Their Solution," by P. B. Reed, which appears regularly in the News.

The series will be resumed in the next issue.

Crosley Reports Loss For First Quarter

CINCINNATI — Net sales of the Crosley Corp. for the first quarter of 1946, as reported recently to stockholders of the corporation, were $4,932,680.

Net loss from operations was reported as $223,896, after provision for anticipated refund of the prior year's excess profits taxes amounting to $491,000.

Wood Manages Coast Nash-Kelvinator Plant

DETROIT — Campbell Wood has been named works manager of Nash-Kelvinator Corp.'s Pacific Coast plant at El Segundo, Calif.

Supplementing the company's facilities in Michigan and Wisconsin, the plant is expected to be in operation on the assembly of Nash cars by late fall.

Mr. Wood has been with Nash-Kelvinator since 1925 in various executive posts.

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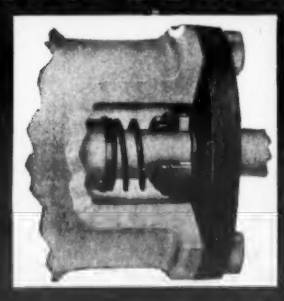

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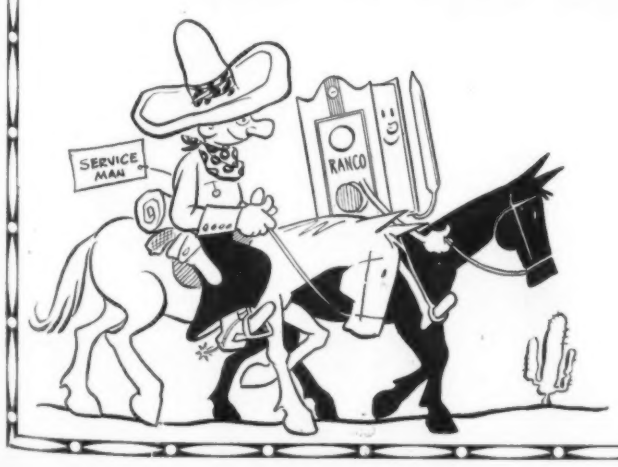

Along the Rio Grande, in the wild and woolly days of cowpunchers, gun slingers and bandits, there was a saying—"A man to ride the river with is a man you can trust"—for obvious reasons.

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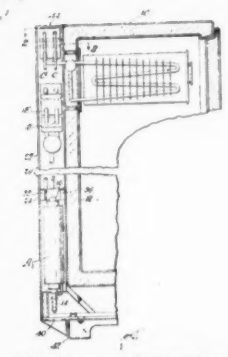
LARKIN COILS, 519 Memorial Drive., S.E., Atlanta, Ga.

PATENTS

Week of May 14

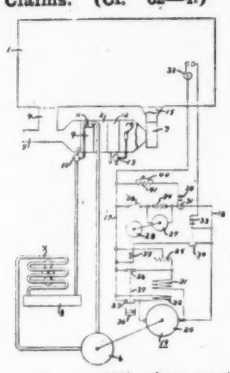
Continued

2,400,215. REFRIGERATION. Donald G. Smellie, Canton, Ohio, assignor to The Hoover Co., North Canton, Ohio, a corporation of Ohio. Application Dec. 8, 1943, Serial No. 513,345. 11 Claims. (Cl. 62—118.)



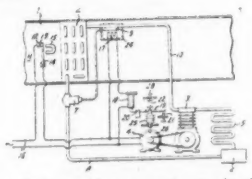
5. In combination, a domestic refrigerator cabinet, two intermittent absorption refrigerating units each having a generator-absorber with a products of combustion flue extending longitudinally therethrough, an air cooled primary condenser and an indirect cooling circuit for each generator-absorber having an air cooled secondary condenser, said units being mounted on an outer wall of said cabinet with the generator-absorbers positioned near the corners of said cabinet adjacent the bottom thereof with the products of combustion flues extending in a vertical direction and with the primary and secondary condensers arranged across the wall of the cabinet above the generator-absorbers and a sheet metal backing plate for said cabinet having three channels facing the cabinet wall, one centrally located and overlying said primary and secondary condensers to direct cooling air thereover, and two laterally located, extending upwardly from said generator-absorbers and forming extensions of said product of combustion flues.

2,400,329. REFRIGERATING APPARATUS. Donald F. Alexander, Oakwood, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application July 27, 1944, Serial No. 546,879. 10 Claims. (Cl. 62—4.)



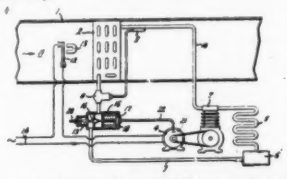
1. In an air conditioning system for an enclosure; a volatile refrigerant system including an evaporator, condenser, and compressor; means for flowing air to be conditioned for said enclosure in thermal exchange with said evaporator; a compound wound motor for operating said compressor; and means responsive to the refrigeration requirements for shorting the series field of said motor for speed control purposes.

2,400,334. REFRIGERATING SYSTEM. Robert U. Berry, Glen Ridge, N. J., assignor to General Electric Co., a corporation of New York. Application June 29, 1944, Serial No. 542,747. 5 Claims. (Cl. 62—4.)



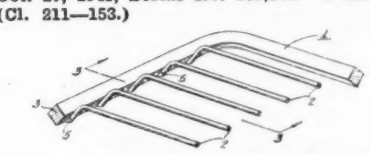
1. A refrigerating system including a compressor and a condenser and an evaporator, a prime mover for driving said compressor, an expansion valve having a control element arranged to be responsive to the temperature of the vaporized refrigerant withdrawn from said evaporator for controlling the flow of refrigerant from said condenser to said evaporator, a heater for supplying normally a predetermined amount of heat to said control element, and means dependent upon a predetermined abnormal operating condition of said prime mover for decreasing the amount of heat supplied by said heater to said element to decrease the flow of refrigerant to said evaporator without interrupting the operation of said prime mover.

2,400,335. REFRIGERATING SYSTEM. Wayne E. Dodson, Caldwell, N. J., assignor to General Electric Co., a corporation of New York. Application June 29, 1944, Serial No. 542,782. 6 Claims. (Cl. 62—4.)



1. A refrigerating system comprising a compressor and a condenser and an evaporator, a prime mover for driving said compressor, a thermostatic expansion valve for controlling the flow of refrigerant from said condenser to said evaporator, and means dependent upon a predetermined abnormal operating condition of said prime mover for modifying the operation of said expansion valve to decrease the mass flow of refrigerant through said evaporator without interrupting the operation of said prime mover.

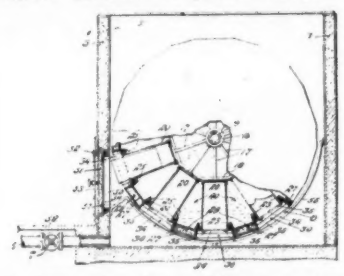
2,400,438. REFRIGERATOR SHELF. John H. Preiffer, Oreland, Pa., assignor, by mesne assignments, to Philco Radio & Television Corp., Philadelphia, Pa., a corporation of Delaware. Application Oct. 27, 1943, Serial No. 507,841. 4 Claims. (Cl. 211—153.)



4. A refrigerator shelf construction, comprising a peripheral frame member of generally rectangular cross section and defining the normally horizontal plane of the shelf, said frame member being disposed so that the diagonals through the cross section thereof lie in the horizontal and vertical planes respectively, and a plurality of elongated cross members having downwardly bent end portions fixed to the lower inner surface of said frame member.

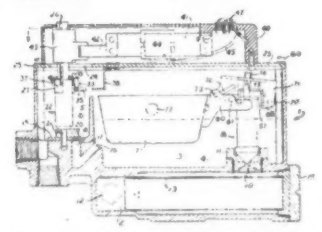
Week of May 21

2,400,517. APPARATUS FOR MAKING ICE. Willis B. Kirkpatrick, Scarsdale, N. Y. Application Oct. 18, 1944, Serial No. 559,302. 21 Claims. (Cl. 62—106.)



1. Apparatus for making ice comprising a tank adapted to contain a liquid to be frozen, a revoluble carrier including an ice can mounted in said tank with its outer end positioned to admit a body of said liquid from said tank and having bottom and side walls extending into and forming a permanent part of a compartment for a refrigerant, and means on the outer end of said can controlling the passage of liquid, alternately, into and out of said can and for shaping the top of the ice formed therein during the freezing operation.

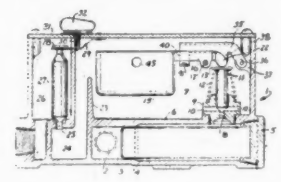
2,400,560. FLOAT VALVE. Homer E. Malone, Milwaukee, Wis., assignor to Perfex Corp., Milwaukee, Wis., a corporation of Wisconsin. Application April 26, 1943, Serial No. 484,535. 9 Claims. (Cl. 137—68.)



1. In a safety constant level control mechanism, a casing providing a float chamber and an inlet port therefor, a valve member associated with said port, said valve member having a head portion and an elongated stem portion of reduced diameter as compared to the head portion, a sleeve member having an internal diameter greater than said stem portion and fitted over said stem portion, guide means on one end of the sleeve member, said guide means extending inwardly for engaging the stem portion, guide means on the stem portion extending outwardly for engaging the sleeve member, a coil spring interposed between the stem portion and sleeve member, said coil spring, yieldably forcing said guide means apart for holding said sleeve member and said head portion in engagement, an open float in said chamber, lever means actuated by said float and arranged to engage said sleeve portion for raising the valve member from its seat as the liquid falls below a predetermined level, means for causing said float to fill and sink if the liquid rises a predetermined amount above said predetermined level, and motion reversing means associated with said lever means for transmitting sinking movement of the float directly to said valve stem portion for forcing the valve closed.

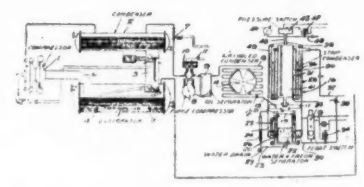
2,400,561. FLOAT VALVE. John L. Harris, Whitefish Bay, Wis., assignor to Parfex Corp., Milwaukee, Wis., a corporation of Wisconsin. Application April 26, 1943, Serial No. 484,568. 12 Claims. (Cl. 137—68.)

1. In a safety constant level control mechanism, a casing providing a float chamber and a liquid inlet port therefor, a valve seat associated with said port, a valve member cooperating with said valve seat, an open float in said chamber, pivoted lever means actuated by the float and arranged to position the valve member gradually in accordance with the position of the float for maintaining a substantially constant liquid level, said lever means providing a predetermined leverage between the float and valve member whereby a predetermined force is avail-



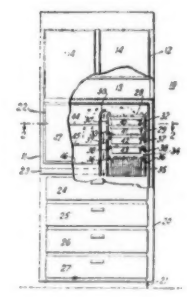
able for holding the valve member against its seat when the liquid is at the desired level, means for causing said open float to fill with liquid and sink when the liquid level rises a predetermined amount above said desired level, means acting through said lever means upon lowering of the float to a predetermined point for applying a greater closing force to the valve member than said predetermined force, and an outlet from the float chamber, said outlet being arranged to trap sufficient liquid in the float chamber to maintain the float above said predetermined point so long as the float is of normal buoyancy.

2,400,620. PURGING SYSTEM FOR REFRIGERATING SYSTEMS. Joseph R. Zwickl, East Orange, N. J., assignor to Worthington Pump & Machinery Corp., Harrison, N. J., a corporation of Delaware. Application Jan. 18, 1945, Serial No. 573,388. 23 Claims. (Cl. 62—115.)



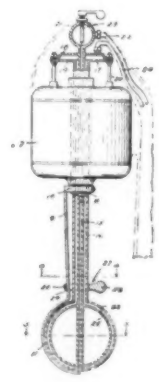
1. In a refrigerating system containing a volatile refrigerant and including a condenser and an evaporator, means for purging the refrigerant system of non-condensibles and polluting condensibles including a separator, means connecting said separator to said condenser to deliver mixed refrigerant and water vapor and non-condensible gases to said separator, means in said separator for separating condensed refrigerant and water, a strip condenser having communication with said separator and receiving non-condensed refrigerant and water vapor together with non-condensible gases from said separator, and a connection between said separator and strip condenser for delivering the separated refrigerant condensate from the separator to the strip condenser.

2,400,634. REFRIGERATOR. Guyon L. C. Earle, Forest Hills, N. Y., assignor, by direct and mesne assignments, to Hugh S. Wertz, as trustee. Application Jan. 15, 1944, Serial No. 518,388. 6 Claims. (Cl. 62—89.)



1. A refrigerator comprising a lower refrigerated portion, an upper refrigerated portion, the front of which is set back from the front of said lower portion, a table top member above said lower portion, and in front of said upper portion, a door in said upper portion pivoted about a vertical axis, an evaporator in said upper portion having a shell which extends both above and below the level of the bottom of said door, a container adapted to rest within said shell, and means for supporting said container within said shell at such a level that at least a part of said container extends below the level of the bottom of said door.

2,400,773. BEVERAGE MIXER AND COOLER. Wilbur A. Nelson and Eleanor K. Nelson, Los Angeles, Calif. Application April 11, 1945, Serial No. 587,678. 3 Claims. (Cl. 257—120.)



1. A beverage mixer of the class described and including a stationary cooling chamber, a combined motor driven agitator and scraper mounted for movement around the chamber, and speed responsive means carried by the combined agitator and scraper for moving the latter into and out of contact with the chamber.

HOUSEHOLD REFRIGERATION

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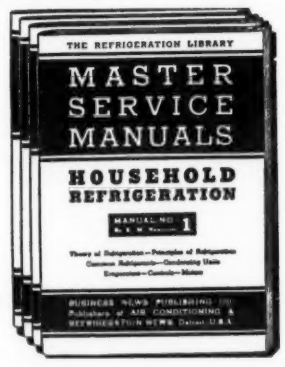

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WANTED: Wholesale distributor operating four warehouses New Mexico and Panhandle-ElPaso areas Texas, wants sales engineer experienced commercial refrigeration, air conditioning, water pumps, heating, ventilating. Excellent compensation. For interview wire or phone collect ZIA ELECTRIC DISTRIBUTING CO., 202 East Marcy St., Santa Fe, New Mexico.

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FOR SALE: 10,000 new aluminum ice cube trays in three popular sizes. Also air-cooled and water-cooled remanufactured condensing units ¼ up to 2 hp. Write for particulars. EDISON COOLING CORP., 310 E. 149th St., Bronx 51, N. Y.

SEALED WESTINGHOUSE units with shorted, leaky, or grounded terminals can be repaired by using our replacement terminals. Set of three $2.85 (Part No. 1030). Immediate delivery. Money-back guarantee. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

SEALED CROSLEY units with leaky terminals can be repaired by you in a few minutes without opening the compressor. Set of three outside replacement terminals $6.75 (Part No. 1020). Installation tool $1.65. Fits all Crosley "F-12" units. Immediate delivery. Money-back guarantee. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

COMPLETE CARRIER 7½ hp. Refrigeration Units—"Freon"—High and low sides in assembled package—Immediate delivery—Crated for export. Suitable for low and medium temperature walk-in refrigerators; Air conditioning applications. Useful in tropical climates. GENERAL REFRIGERATORS CORP., 678 Broadway, New York 12, N. Y. STuyvesant 9-1222.

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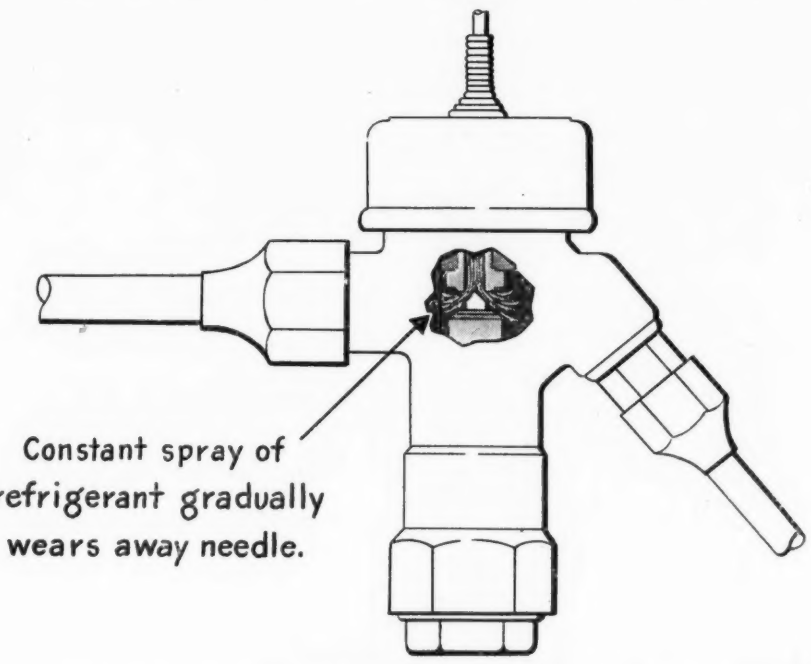
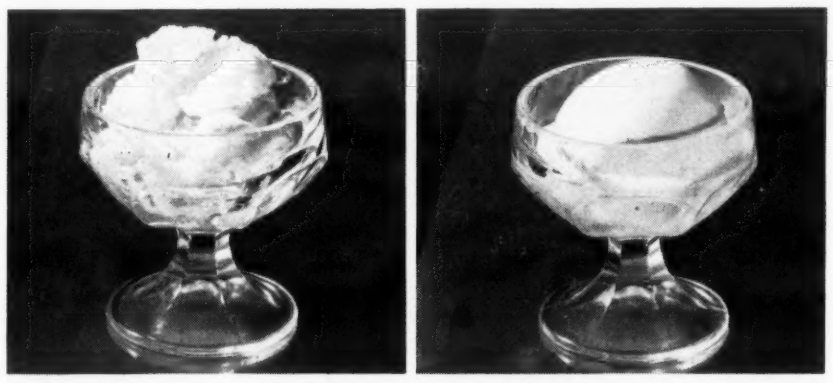
35—(B) Excessive Expansion Valve Wear



The valve is supposed to open and close only as needed to maintain the proper temperature.

With a refrigerant shortage, the valve remains open constantly, and the constant spray of refrigerant gradually wears away the needle.

36—(C) Improper Fixture Temperature



Final result of shortage of refrigerant is *improper fixture temperature.* A slight shortage will cause increased running time, and may make the fixture too cold.

An extreme shortage will cause continuous running, with the fixture too warm.

37—How to Diagnose and Correct the Cause of Shortage of Refrigerant

In the case of a refrigerant shortage, one or all of the following conditions will be present:

1. Suction pressure too low.
2. Wide difference between coil inlet and outlet temperature.
3. Head pressure too low.
4. Hissing noise at expansion or float valve.

In previous sections, we have already covered the first and second points. However, the methods suggested for correcting them will not work in the case of a refrigerant shortage.

Air Devices Appoints 3 As Postwar Expansion Program Gets Started

NEW YORK CITY—As part of a vast postwar expansion program, three appointments are announced by Air Devices, Inc., manufacturer of Agitair products. T. A. Hughes will become manager of sales promotion for all Agitair products; J. Keselis has been made production manager; and R. W. Christie, research engineer.

Mr. Hughes, formerly advertising and sales promotion manager for Westinghouse air conditioning, will now have charge of sales promotion on hot water generators and oil-fired hot gas generating furnaces.

Mr. Keselis will be responsible for the manufacture of Agitair air filters.

Oklahoma City Dealer Opens Store Handling Philco Line

OKLAHOMA CITY, Okla. — Simmons-Blasingame, Inc., sales and service store, has opened at 2214 Exchange Ave., under management of Mas Blasingame. The company has added an electrical appliance department dealing in Philco refrigerators, radios, and air conditioning units.

Kurtzman Named To Store Post

NIAGARA FALLS, N. Y.—George D. Kurtzman has been appointed basement manager of J. N. Adam & Co. Niagara Falls store, including refrigerators and appliances. Recently discharged from the armed forces, Mr. Kurtzman had eight years previous association with the store.

Kolb Becomes Cleveland Electric Illuminating Co. Assistant Sales Head

CLEVELAND — F. A. Kolb has been appointed assistant sales manager of the Cleveland Electric Illuminating Co., J. E. North, general sales manager, has announced.

Mr. Kolb has been manager of commercial sales for The Illuminating Co. since 1944. Prior to that, he was director of commercial sales for the Duquesne Light Co. of Pittsburgh, Pa.

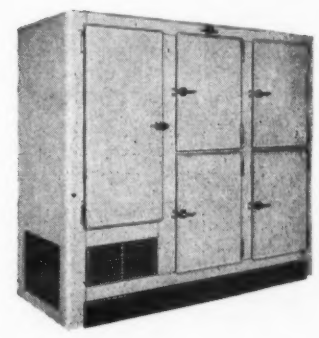
After graduation from Carnegie Tech in 1927, Mr. Kolb joined the Duquesne Light Co. as an apprentice engineer. He worked in system planning and power sales and, in 1934, was given charge of the commercial sales department.

watch KOCH

get into mass production of advanced post-war refrigerators.

It pays to wait for worthy products. The two Koch factories are working full time now. One day, in the not too distant future, the huge back-log of orders will be cleaned up.

It will then be possible for Koch to serve some additional distributors.



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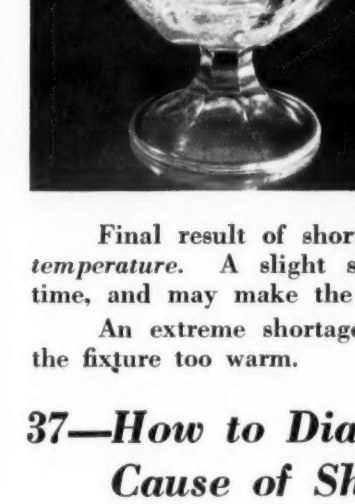

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New Window Unit--

(Concluded from Page 1, Column 2)

pressor, which, with the condensing coil, is located in the section of the cabinet outside the window.

In the room-side section of the cabinet are the filter, cooling coil, outlet duct, and motor driven fan.

The metal cabinet, 22½ in. wide, 34½ in. long, and 13⅝ in. high, is insulated against heat and sound by a 1-in. thick lining of glass fiber. The air filter is said to be easily accessible for changing through a removable cover on the front. Special attachments are provided for flush fitting.

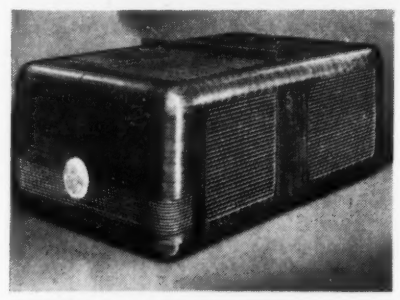
The conditioning unit is controlled by a thermostatic expansion valve with a special pressure limiting feature. This feature keeps the unit running constantly when very hot days bring a peak load, and when the compressor overload protection device normally would be continually shutting off the unit.

By an on-off switch, the complete air conditioner may be turned off or the fan operated only, as desired, the company says.

The company plans to market the units through department stores, public utilities, and independent appliance dealers, it was said.

Pacific Mfg. Corp. is concentrating on the one-room size air conditioning unit for the present, but plans to manufacture larger units later, according to Mr. May.

An affiliate of the corporation, Auto Coolers, Inc., was organized after V-J Day for air conditioning design and research at Palo Alto, Calif. It has additional facilities at the plant here.



Window type air conditioner being made by Pacific Mfg. Corp.

York Declares Dividend

YORK, Pa.—York Corp. has declared a dividend on its capital stock of 15 cents per share, payable July 15, 1946 to stockholders of record at the close of business on June 20, 1946. The preceding dividend was of like amount paid on Jan. 15, 1946.

Kerotest Buys California Valve Producer--

(Concluded from Page 1, Column 3)

valves and Kerotest valves will be produced in the new plant for Pacific Coast and western distribution. New equipment was being installed in the building at Slauson and Aleoa Aves. in the Vernon section of Los Angeles, to afford complete manufacturing and warehousing facilities for the complete line.

Purchase of Security Valve Division—described as an outstanding West Coast producer of steel refinery, industrial, and marine valves for many years—included all of its present stock, designs, goodwill, and equipment.

Officers of Kerotest Pacific Co. were announced as follows: Mr. Mueller, president; Stanley J. Roush, vice president and general sales manager; and Walter G. Swaney, secretary-treasurer and general manager.

General sales offices will be located at 3305 E. Slauson Ave., with district sales offices in San Francisco, Houston, Chicago, Odessa, and New York. Sales representatives will be stationed in Tulsa, New Orleans, Richmond (Va.), and Charleston (W. Va.).

"During World War II, the complete manufacturing facilities of both Kerotest and Security plants were devoted to the production of valves and fittings for war requirements," the announcement pointed out. "They were two of only 15 manufacturers in the entire United States to receive a fifth added star award for their Maritime 'M' pennant."

Pullman Kitchen Priced

WASHINGTON, D. C.—Comprised of an electric refrigerator, a cabinet, and a sink, the Model 1 Pullman Kitchen manufactured by S. Norman Augenstein may be sold to consumers at a top price of $353, it was announced recently by OPA in Order 524, MPR 591.

OPA also fixed a ceiling of $251.10 on sales of the kitchen to dealers.

New Ebco Distributor

MINOT, N. D.—The Ebco Mfg. Co. has announced the appointment of the Western Auto Parts Co., located at 308 Second St. S.W., as a franchised distributor of Oasis electric water coolers for the state of North Dakota.

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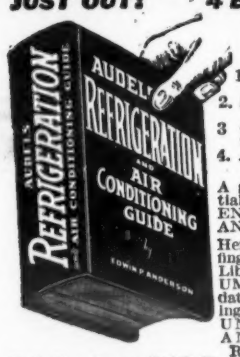

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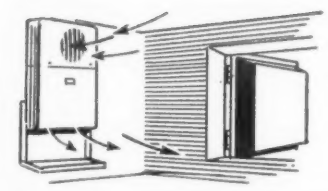

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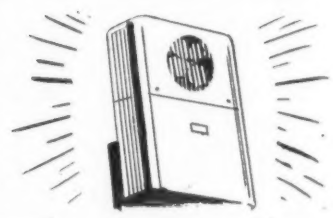
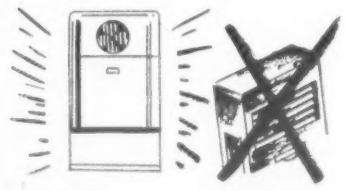


FINISH — Baked white enamel. Sanitary and easy to keep clean. Protects from rust and corrosion.



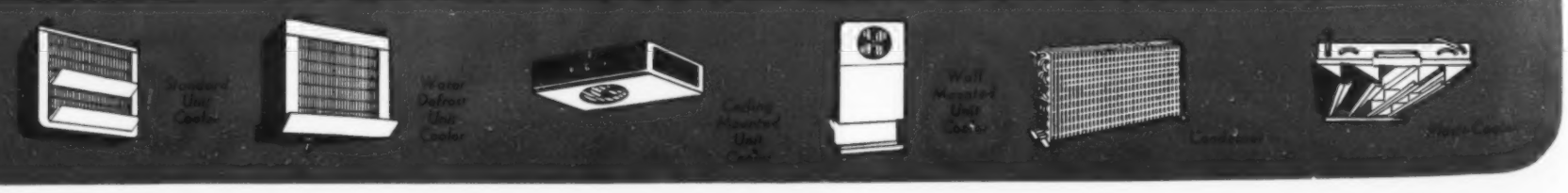
CASES—Made of Galvanneal Steel. Resist corrosion and provide excellent base for enamel coating.

BUSH

Leading Wholesale Refrigeration Dealers the country over have picked BUSH Units because *they know what's RIGHT!* Specialists in their line, these men represent the foremost authority in the industry . . . with knowledge and experience backed by years of selling, installing and servicing all types of refrigeration and air conditioning equipment.

The vast majority of these qualified experts invariably choose BUSH *Dependable* Units . . . thousands of which have been delivering constant, trouble-free, dependable service all over the world and have built an enviable record of performance that stands unchallenged.

HEAT TRANSFER PRODUCTS

Sold by Leading Refrigeration Equipment Wholesalers The Country Over

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